# NATUR CYMRU

A Review of WILDLIFE in Wales
Rhif/Number 3 • Gwanwyn/Spring 2002

- Here be dragons
- Forests and farms
- O Bantycelyn i Gaseg Falltraeth
- Forest feeders – the rôle of big animals in woodland
- Snakes alive
- A patchwork of nature – farming for wildlife
- Bumblebees – bringing back the buzz
- Restoring networks of forest habitats
- Llên y llysiau – helyg Mair
- Seeds of change

# NATUR CYMRU

A *Review of* WILDLIFE in Wales

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***Natur Cymru*** is intended to promote the exchange of information about biodiversity and encourage debate. The views expressed in this magazine are not necessarily those of the sponsors. Please submit articles for the next issue, in Welsh or English, by the end of April 2002. If you have information, ideas for articles or artwork which you think might be of interest to readers, please contact the Editor.

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Llun y clawr/Cover photo: *Wild daffodils, double flowers* – Elizabeth Fleming-Williams

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**Golygyddol/Editorial** ........ 2 – 3
- James Robertson

**Here be dragons** ........ 4 – 7
- Peter Marren

**Forests and farms** – *breaking down the barriers* ........ 8 – 11
- John Good

**O Bantycelyn i Gaseg Falltraeth** – *enwau lleoedd* ........ 12 – 14
- Handel Jones

**Forest feeders** – *the rôle of big animals in woodland* ........ 15 – 17
- Jim Latham

**Snakes alive** ........ 18 – 20
- Liz Howe

**A patchwork of nature** – *farming for wildlife* ........ 21 – 25
- Barbara Thomas & Angie Polkey

**Bumblebees** – *bringing back the buzz* ........ 26 – 29
- Claire Carvell

**Restoring networks of forest habitats** ........ 30 – 33
- George Peterken

**Llên y llysiau** – *helyg Mair* ........ 34 – 36
- Twm Elias

**Seeds of change** ........ 37 – 39
- Ruth Jenkins & Scott Wilson

Nodweddion **arferol/Regular** features:

**Nodiadau o'r Cynulliad/***Assembly notebook* ▪ Tim Stowe ........ 40 – 41
**Green bookshelf/***Silff lyfrau amgylcheddol* ▪ James Robertson & Andrew Lucas ........ 42
**Nature at large/***Natur y byd* ▪ Colin Jones & Ray Woods ........ 43 – 44
**Biodiversity Round-up/***Newyddion Bioamrywiaeth* ........ 45
**Materion morol/***Marine matters* ▪ Rhys Jones & Lucy Kay ........ 46
**Nature in reserve/***Natur mewn gwarchodfeydd* ▪ Paul Culyer ........ 47 – 48

# Golygyddol

Llun: E. Fleming-Williams.

*Cennin Pedr,* Narcissus pseudonarcissus.

Mae'n Ddydd Gŵyl Dewi unwaith eto, a bydd llawer ohonom yn falch o wisgo ein cenhinen Bedr. Efallai mai blodyn plastig wedi'i brynu o garej fydd gennych, neu flodyn go iawn wedi'i gasglu o'r ardd. Sawl un ohonom fydd yn cysylltu'r symbol hwn o genedlaetholdeb â'r genhinen Bedr wyllt yng nghoedwigoedd a chaeau Cymru? I'r mwyafrif helaeth ohonom, y genhinen Bedr yw'r blodyn sydd ym mhob gardd, sy'n cael ei dyfu'n helaeth yn yr Iseldiroedd gan fwyaf, ac sydd wedi'i blannu ar ochr llawer o ffyrdd a chylchfannau.

Mae natur a diwylliant yn perthyn yn agos i'w gilydd, ac efallai mai'r genhinen Bedr wyllt y dylem ei hadfer ar ein priffyrdd a'n cilffyrdd. Dim ond â gwinwydd melyn llachar y genhinen Bedr wyllt, sy'n symbol o dymor gobaith a dechrau o'r newydd, y byddai Dewi Sant wedi bod yn gyfarwydd. Wrth inni ei anrhydeddu ef, efallai y dylem anrhydeddu'r genhinen Bedr wyllt hefyd. Mae honno wedi cael tro mor sâl yma a ledled y byd, fel y mae Ray Woods yn ei adrodd yn y rhifyn hwn.

Nid yw'r genhinen Bedr wyllt i'w gweld mewn coetiroedd neu yn y caeau yn unig, ond mae'n gartrefol ar dir isel rhwng y coedwigoedd a'r dolydd, a'i gymysgedd brith o olau a chysgod. Fel Natur, nid yw'r genhinen Bedr yn hoffi cael ei chyfyngu na'i chategoreiddio: yn wir, mae'n arwyddlun ardderchog.

Ar un adeg, roedd y fforest yn fan lle y gellid dod o hyd i bob math o gynefin; roedd dolydd a chorsydd, gweunydd a phrysgwydd, gwlyptiroedd a llennyrch i gyd yn rhan o ystyr y gair fforest. Dim ond yn ddiweddar, ers i reolaeth tir gael ei bennu'n bennaf gan grantiau, y mae tir wedi gorfod bod yn un peth neu'r llall. Os yn goedwig, mae'n rhaid iddo gael ei ffensio ac mae'n rhaid iddi aildyfu'n naturiol neu gael ei blannu i gyflenwi digon o gynnyrch pren.

Os bydd y coed yn cael eu pori, bydd yn rhaid i hyn barhau os yw'r tir i gael ei ystyried ar gyfer taliadau da byw.

Mae'n bryd llacio ar y llinellau terfyn llym hyn, fel mae nifer o erthyglau yn y rhifyn hwn yn dadlau. Dylai coed a choetiroedd fod yn gysylltiedig â'i gilydd er mwyn darparu fframwaith naturiol i'n bywydau mewn gwlad hardd a modern. Mae plannu coed o had wedi'u casglu'n lleol yn rhan o hyn; fel y mae ailintegreiddio ffermio a choedwigaeth, a sefydlu rhwydweithiau a choridorau coetiroedd lle y gallai cennin Pedr gwyllt ledu unwaith eto. Ni ddylem anghofio'r rôl werthfawr y gall anifeiliaid mawr ei chwarae yn ecoleg ein fforestydd. Efallai y dylai hynny gynnwys symbol arall o genedlaetholdeb y cyfeirir ato yn y rhifyn hwn. A ddywedodd rhywun "nôl â'r dreigiau?"

**James Robertson**

# Editorial

St. David's day is here again, and many of us will wear with pride a daffodil pinned to our lapel. It may be a plastic imitation bought in a garage, or a real flower picked from a garden. How many of us will link this emblem of nationhood with the wild daffodil of the woods and fields of Wales? To most of us, the daffodil is that ubiquitous garden flower, bred in great number and variety largely in Holland, which has been planted on so many roadsides and roundabouts.

Nature and culture are closely intertwined, so perhaps it is the wild daffodil that we should restore to our highways and byways. St. David would have been familiar only with the bright yellow trumpets of the wild daffodil, a symbol of the season of hope and new beginnings. As we honour him, perhaps we should honour, too, the wild daffodil, which has fared so badly here and throughout its restricted world range, as Ray Woods reports elsewhere in this issue.

The wild daffodil, called *Cennin Pedr* or St. Peter's Leek in Welsh, is neither a strict woodland dweller, nor a flower of the field, but enjoys the nether-land between woods and meadows, a dappled mix of light and shade. Like Nature, the daffodil does not like to be constrained or categorised: a good emblem indeed.

The forest was once a place where all habitats could be found; meadows and bogs, heaths and scrub, wetlands and glades were all part of the meaning of the term forest. It is only in recent times, since land management has become primarily determined by grants, that land has got to be one thing or the other: if a wood, it must be fenced and regenerate naturally or be planted up to achieve sufficient timber production; if the trees are grazed, then this must continue if the land is to count for livestock payments.

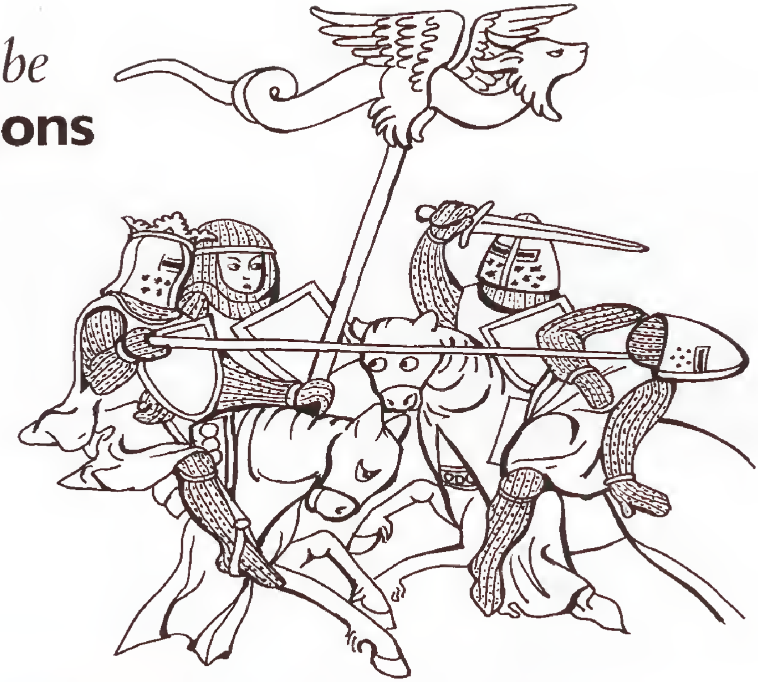
It is time to soften these harsh demarcation lines, as several articles in this issue argue. Trees and woodlands should be linked to provide a natural framework for our lives in a beautiful, modern country. Planting trees from locally-collected seed is part of the story; so is re-integrating farming and forestry, and establishing woodland networks and corridors, into which wild daffodils may once more spread. We should not forget the valuable role that big beasts can play in the ecology of our forests. Perhaps that should include another symbol of nationhood, which we feature in this issue. Did someone say "Bring back dragons?"

**James Robertson**

Photo: Ray Woods.

*Daffodil wood, Whitton.*

# *Here be* **dragons**

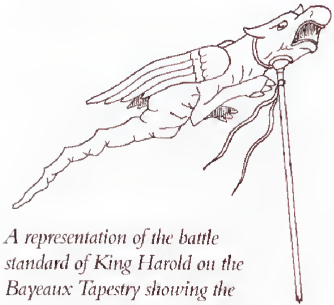


*King Arthur, from a manuscript in the Bibliotheque Nationale, Paris, with wyvern crest.*

*Dragons have an ancient lineage and played an important role in the history of Wales and yet are rarely seen in the 21st century.* ***Peter Marren*** *examines the different species and cites loss of habitat as a crucial factor in their decline.*

The flag of Wales bears a red dragon. I think we can all agree on that. There it stands on four scaly legs facing right on a field of green (vert) and white (argent). His name is *Y Ddraig Goch* (the Red Dragon) and he is about 1,600 years old. Why did the Welsh choose a dragon, when everyone else went for lions, eagles or lilies? Forgive me if you know the answer. It gets more interesting later on.

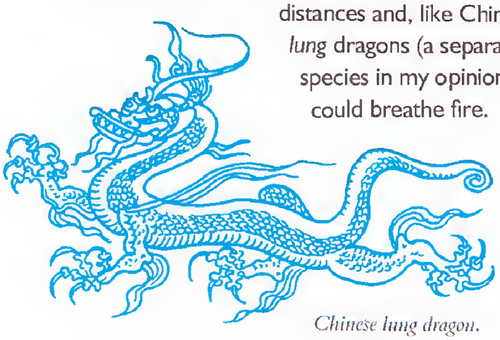
*Y Ddraig Goch* appears in the *Prophecies of Merlin*, an early medieval bestseller. It was revealed to the 5th century king, Vortigern, as he sat on the banks of a dry pool, incidentally a classic dragon habitat. Two winged, fire-breathing dragons, one red, the other white, emerged from the mud and fought. Soon the white one began to gain the upper hand and forced the red one back to the edge of the pond. The Red Dragon, explained Merlin, represents the people of Britain, the White One the Saxon foe. The White will take over the cavernous dens of the Red, but the oppressed Britons, shortly to become the Welsh, would prevail in the end and resist the savagery of the invaders with the help of the Cornish Boar (Merlin, 12th century). The hero who brought this about, Cadwaladr of Gwynedd, adopted the Red Dragon as his war standard. Perhaps it looked like the one shown on the Bayeaux Tapestry, born on a pole and hollow inside, like a windsock.



*A representation of the battle standard of King Harold on the Bayeaux Tapestry showing the Wyvern of Wessex, by a local artist.*

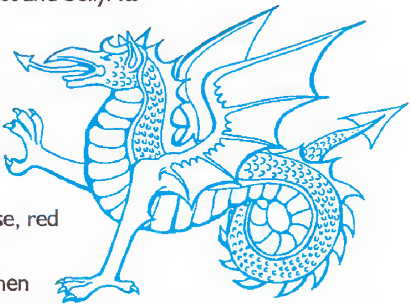
Later the Tudors (who were, of course, of Welsh descent in the male line) borrowed it as a supporter to the royal coat of arms. It was later superceded by the Hanoverian unicorn.

*Y Ddraig Goch* was obviously a symbolic dragon. But what can we learn about the zoology and ecology of dragons in general? Clearly dragons have declined considerably since classical antiquity, when you could often find them working as a kind of security guard at cultural treasures from the *Apples of Hesperides* at one end of the world, somewhere near Gibraltar, to the *Golden Fleece*, at the other end, in the Caucasus. *Drakon*, Greek for dragon, comes from the verb meaning 'to watch over' or 'look at'. A very fine dragon called the *Python* watched over the shrine at Delphi until it was irresponsibly killed by Apollo. These classical dragons seem to have been serpentine creatures, without wings or fire-breathing abilities. In Gothic northern Europe, dragons were more mobile, able to fly long distances and, like Chinese *lung* dragons (a separate species in my opinion), could breathe fire.


Chinese lung dragon.

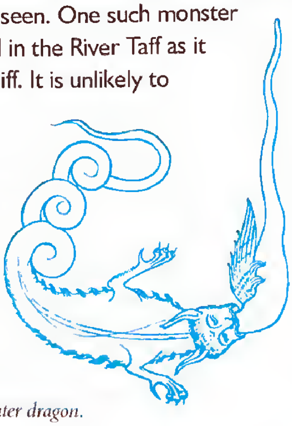
Like their Mediterranean cousins, they were attracted to glittering objects. They were carnivorous, and the larger ones are said to have eaten human flesh, generally selecting the males for immediate consumption while kidnapping maiden females for slave duty back at the lair. Fortunately, these dangerous dragons were no match for a well-armed hero (e.g. Beowulf, Siegfried, St. George etc), and, being solitary and not known to mate, probably died out during the Dark Ages. King Arthur, for example, met very few dragons, and King Alfred none at all.

There was clearly more than one kind of dragon (Anon, 12th century), though whether they were different species in the Linnaean sense is debatable. Neither Linnaeus nor any other reputable taxonomist has pronounced definitively on this subject[1]. You can trace records of at least three kinds of dragon in Wales. The largest and rarest was the *Great Dragon*, the stock dragon of heraldry, and the one that adorns the Welsh flag. This dragon had a horny head, a scaly back and some sort of rolled armour on its chest and belly. Its wings were bat-like, the tail pointed, and it had four legs. It came in all sorts of colours including, of course, red and white (Anon, 12th century). When not flying, this kind of dragon usually stood on all fours, like a cow. It could coil up in repose but is never shown sitting down (Aldrovandi, 1610). This habit distinguishes it from the second kind, the *Wyvern*, which had only two legs and may possibly be a hybrid between a Great Dragon and an eagle. The Wyvern is always shown sitting down when in repose, using its long curly tail as a support. The Wyvern was green on the head, back and legs, and red on the chest, belly and the insides of its wings. *The Dragon of Wessex* seems to have been a Wyvern (Odo, 1066), but definitely not the Welsh one.


Heraldic Wyvern.

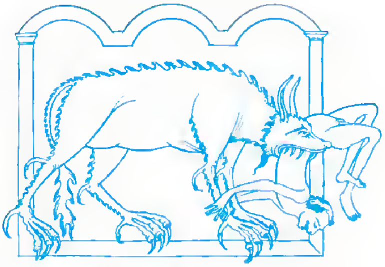
The third and commonest kind of Welsh dragon was smaller and more serpent-like. It was seclusive and seems to have lasted longer than the others. This relatively harmless *Lesser Dragon* was wingless, and often legless too, and so could be confused with a large snake. One clue to its identity is that Wales has no large snakes. Another is that this dragon often wore a crown. It paired for life, and was associated with farmhouses in parts of Wales, to which it was said to bring good luck. Unfortunately, it was apt to raid poultry and also to steal valuables, and so was often killed by the irate, if misguided, farmer. It was important, too, to keep the Lesser Dragon well away from women's milk or consecrated wafers. Consumption of these commodities resulted in a gremlin-like transformation into a *gwiber*, a horrible beast, monstrous, winged and irredeemably toxic. In what places could you expect to find Welsh dragons? The main area for them seems to have been Glamorgan, with outlying lairs in Pembroke, Snowdonia and the Wye Valley. The most likely habitats were woodland, caves, and the vicinity of rivers and lakes. The woods near Penllyn Castle were notorious for colourful, bird-like dragons, which when disturbed, either slithered off to their hiding place or 'flew over people's heads with outspread wings bright, and sometimes with eyes too, like feathers in a peacock's tail' (Simpson, 1980). A hole in a bank near Castle Gwys, Haverfordwest, was once the abode of a strange dragon with innumerable eyes, which enabled it to see you coming from whatever direction. A cunning cottager eventually fooled the dragon by hiding in a barrel and rolling downhill past the dragon's lair, thereby earning himself a rich reward (Topsell, 1607). This dragon seems to have been a form of *basilisk* or *cockatrice*, whose gaze can be fatal to the unwary.

Finally there may have been aquatic dragons, though they are easily confused with *hydrae* (giant watersnakes) or even *kelpies* (monsters that live in bottomless rivers, mostly in Scotland) – especially as they are rarely, if ever, seen. One such monster lived under a whirlpool in the River Taff as it neared the sea at Cardiff. It is unlikely to be there any longer as the site has probably been destroyed by the Cardiff Bay barrage. Another one lurked in Llyn-y-Gader on Snowdon.



*The Hydrus, River Nile water dragon.*

Although no one ever saw the beasts, people falling into these fatal pools were never seen again, which tends to prove it. Other possible dragon lairs are remembered today on church weathervanes (e.g. on the church tower at Llandeilo in the Tywi Valley) and pub signs, for example the *Dragon's Head* at Llangenny in Powys or the *Double Dragon* in Llanelli. The coast near Llanelli seems a likely spot for dragons. Welsh dragon stories are usually reported at third or fourth hand, and from dubious sources. Giraldus Cambrensis (1191) never saw a single one in all his travels through Wales. Even the dragons of Geoffrey of Monmouth (1136) appear mainly in visions or in portents, like the great stellar dragon that streamed across the sky on the death of the British hero, Aurelius Ambrosius. On the other hand, they could pop up unexpectedly at any time, in various guises, as great worms, monstrous serpents or colourful bird-like creatures. A possible reason for the rarity of Welsh dragons may be lack of suitable prey. A favourite victim of large dragons was the elephant, which it caught by lassoing with its tail (Neckam, 1200), a dragon's tail being much stronger than its feet or jaws. Semi-aquatic dragons also caught crocodiles, killing them by slithering down their throats covered in mud and splitting them open from the inside (Aldrovandi, 1610). Welsh dragons had to make do with chickens.



*A medieval crocodile, sometimes confused with dragons.*

It is possible, indeed, to doubt whether Welsh dragons ever existed (e.g. Brown, 1646). A medieval scholar would probably query the premise of existential evidence. Are we not all figments in the imagination of God? No one ever went out looking for dragon droppings or tell-tale scorched villages. Medieval zoologists studied their beasts in monastery libraries, and incorporated them into their world view. Was it not St. Augustine who told us it did not matter whether certain animals existed; that what mattered was *what they meant?* Well, yes it was – and he got the idea from Aristotle, the fount of all wisdom. Dragons were creatures of magic and wonder, from a time when the human mind contemplated all kinds of fantastical animals. Dragons stood outside the natural order of things. They were equally at home in the elements of the birds (air), the beasts (earth), the fishes (water) and the heavens (fire). They embodied watchfulness, sometimes perverted into greed, just as the lion embodied valour and royal benevolence, or the elephant wisdom and chastity. They were mystical beasts, elusive, chimerical, benign or evil, beyond rational explanation. The Saxon enemy were more at home with stolid, straightforward beasts like lions. In the light of history, you can see why the Welsh preferred dragons.

**Peter Marren** is a well-known natural historian. His next book, *Nature Conservation*, in the *New Naturalist* series, is due out in May.

### References

Aldrovandi, U. (1610) *Historia*. Bologna.

Anon (12th century) *Bestiary* or Book of Beasts, being an amplification of *The Physiologus* of late Classical times.

Brown, Sir T. (1646) *Pseudodoxia Epidemica* or Enquiries into … Vulgar and Common Errors. London.

Cambrensis, Giraldus (1191) *Itinerarium Cambrense*.

Merlin (12th century) Prophesies of Merlin. In: *Monmouth, G. of (1191), Historia Regum Britanniae, op. cit*.

Monmouth, Geoffrey of (1136) *Historia Regum Britanniae* or *History of the Kings of Britain*.

Neckam, A. (c. 1200) *De Naturis Rerum*.

Odo (1066) *Bayeaux Tapestry*, probably woven in England, to the specification of Odo, Bishop of Bayeaux

Simpson, J. (1980) *British Dragons*. Batsford.

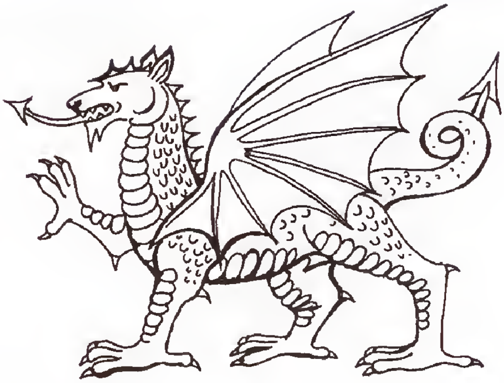
Topsell, E. (1608) *The Historie of Serpents*. London.

[1] 'Of these creatures [i.e. dragons] how many species, how many calamities, how many griefs, and what a lot of different colours they have got!' Anon, Twelfth Century expansion of the *Physiologus* or *Bestiary*, translated by T.H. White.

## Sawl math o ddraig sydd?

Mae'n amlwg fod niferoedd dreigiau wedi dirywio'n arw ers Oes y Clasuron ond roedd yna o leiaf dri math o ddraig yng Nghymru. Y fwyaf a'r brinnaf oedd y Ddraig Fawr, fel y Ddraig Goch. Roedd ganddi bedair coes, pen corniog, patrwm fel cen ar ei chefn a math o arfwisg ar ei bron a'i stumog. Yr ail fath yw'r wifr sydd fel croes rhwng Draig Fawr ac eryr, gyda dwy goes, gwyrdd ar ei chefn, ei choesau a'i phen a choch ar ei bron a than ei hadenydd.

Roedd y trydydd math yn debycach i sarff ac yn gymharol ddiniwed – os na fyddai'n bwyta llaeth menyw neu afrlladen a throi'n wiber ffyrnig. Morgannwg oedd cadarnle'r dreigiau, gyda rhai yn Sir Benfro, Eryri a Dyffryn Gwy. Yn amlwg, roedd seirff dŵr hefyd gan fod pobl yn syrthio i byllau a diflannu am byth. Mae rhai'n amau bodolaeth dreigiau ond roedden nhw'n golygu rhywbeth – a dyna sy'n bwysig. Roedden nhw y tu hwnt i esboniad rhesymol – o ystyried hanes, gallwch ddeall pam fod Cymry mor hoff ohonyn nhw.



# Forests and farms – *breaking down the barriers*

*Charcoal burners, Cilibion Woods, Gower.*

Photo: Woodfall Wild Images.

*The sharp distinction between forests and farms is a relatively modern phenomenon; once, the same piece of land was expected to provide a host of different agricultural and silvicultural products.* ***John Good*** *considers whether, with a little imagination, new patterns of management could be encouraged which would help us rediscover old wisdoms, and integrate farming and forestry.*

From the Norman conquest until the dissolution of the monasteries in 1536-39 there was generally close integration of farming and forestry in Wales. The harvesting and sale of forest products provided important income for the monastic estates which occupied large parts of the principality[1]. These included fruit and nuts, honey and wax, venison, wood and charcoal, as well as the lease of forest land for pannage and pasture. Many peasants, whether freemen or bondmen, lived and worked in the woods harvesting these essential commodities in addition to looking after their own livestock and crops. There was generally no clear demarcation between farmed land and forest at this time, woodland often comprising only some 30% of the forest area. Indeed, the provision of pasture for livestock was one of the most important functions of forests and woods. Crucially for the survival and well being of the woods, however, the grazing rights of free tenants were frequently described in terms of numbers of livestock, i.e. cattle, oxen, sheep, horses and swine, that they were allowed to graze in a particular forest area[2]. Thus grazing was controlled and presumably used effectively to manage the wooded areas.

The effective integrated management of farming and forestry suffered a mortal blow with the break-up of the monastic estates and the sale of their lands to the highest bidders. Many new woodland owners felled timber indiscriminately and raised additional cash by increasing graziers' rents in exchange for permission to graze more animals. This inevitably resulted in negative impacts on woodland regeneration, which in turn led to exclusion of livestock and separation of grazed and woodland areas. Only those whose work was tied to the woods, such as foresters, charcoal burners and bodgers, now used the woods, and the 'woodland culture' that had been part of the social structure of Wales was gradually lost.

The demarcation of forestry from farming became more entrenched after the growth of the Forestry Commission in 1919, which saw an acceleration in the purchase and planting of new land, especially in the 1950s and 1960s, with plantations of non-native trees, mostly conifers grown for timber production. Tax incentives were offered at this time to encourage private landowners or farmers to manage native broadleaved woodlands or plant new ones and many woods, including ancient semi-natural examples, were under-planted with faster growing conifers.

Photo: K.C. Walton.

*Dinas Emrys, classic Atlantic oakwood where grazing animals are excluded but might have a rôle to play.*

So, we have arrived at a situation where our woodlands are mostly fenced plantations of non-native conifers, chiefly Sitka Spruce, planted with the sole intention of timber production, separated from the surrounding farmland by stockproof fences and generally owned and managed independently. Our few remaining native broadleaved woodlands are mostly fragmentary, unmanaged, and often derelict because they are open to sheep. There is little or no integration of farming and forestry, except on some private estates which have maintained a traditional approach.

Thankfully there is now an exciting opportunity to challenge all this and to reinstate, if we wish, more integrated systems of management that are likely to benefit biodiversity by providing a more intimate mix of wooded and unwooded habitats. Likely CAP reform, low returns from conventional softwood production, the development of standards for sustainable forestry and the Tir Gofal agri-environment scheme all contribute to this brighter prospect. But there are still various factors hindering the development of more integrated farming and forestry within Wales:

- Continuing overgrazing that limits the potential for establishing and maintaining woodlands without total exclusion of stock. This perpetuates psychological as well as practical barriers to the development of the mix of high and low density woodland and open areas on farms. This generally requires light grazing rather than exclusion of livestock, to maintain optimal biodiversity.

- Livestock headage payment based on area, where payments can only be claimed on areas that are grazed. This is exacerbated by the continuing substantial gap between support funds available for livestock farming and forestry, particularly on the poorest land in the uplands.[3]

- Forestry schemes, such as the Woodland Improvement Grant Scheme and the various Challenge fund schemes aimed at creation or enhancement of native woodlands, which generally prescribe livestock exclusion even though some grazing may be essential to develop or maintain features of key interest.

- Low current and predicted prices for forest products are likely to dissuade hard pressed farmers from planting trees when they are seeking new income streams to boost their falling incomes from agricultural activities.

Photo: John Good.

*Derelict open woodland which could recover if sheep numbers were controlled.*

Resolving these problems will not be easy and will require more flexible grant-aid structures than exist at present. In addition to removing the anomalies noted above relating to headage payments, altering the structure of Tir Gofal to encourage more tree planting and more integrated management of farming and forestry may be one key mechanism in Wales. If willingness to do this were given more weight when assessing applications to the scheme – which is competitive and over-subscribed – this would be helpful. This might involve increasing the payments for woodland management and planting, but only if the two components are managed in an integrated way, or perhaps more controversially, giving more weight to applications from farmers with an 'integrating attitude'. It might also be appropriate to vary payments, targeting funds for woodland maintenance and planting within a whole-farm context on applicants from areas where such activities are most needed.[4]

Only when landowners, farmers and the communities in which they live and work come to regard integrated farming and forestry as the norm for a sustainable rural economy can the long-lost 'woodland culture' be restored. Tir Coed is already working hard to achieve this change in attitude through pilot schemes, particularly a flagship scheme in the Ystwyth Valley, Ceredigion, which will be one of the schemes funded by the Cydcoed programme for Objective 1. Also funded under Objective 1 is the Shelterwoods (Cysgod y Coed) programme which shows an enlightened approach to integration, using trees to create benefits for farmers in their existing farm enterprises rather than trying to get them to plant trees instead of farming the land.

There is need for bold thinking when developing such schemes, taking cognisance of what is already being done elsewhere. For example, a system is being developed on a farm in the west of Scotland that aims to have substantial tree planting in an upland area, but with patches of high quality grassland (termed 'lawns') within the forest[5]. The aim is to develop a system of farming whereby sheep could summer on the 'lawns' and produce fat lambs, but would overwinter on other land. The 'lawns' would be managed to a fairly high intensity in order to provide good quality forage; they do not aim to have any biodiversity benefit, rather they are simply a grazing resource. Overall it is expected that the gross margin per sheep will increase compared with the current moorland grazing system, and this should more than compensate for reduced stocking rates due to reduced forage area and the need to minimise damage to the trees.

It is expected that as well as enhancing economic benefits to the local community the integrated farming/forestry system will deliver enhanced biodiversity through provision of a woodland component in an otherwise largely treeless area. We need to consider establishing similar demonstration farms in different parts of Wales, but altered as necessary to meet local Welsh conditions. This will require substantial long-term commitment by NAW and the various NGOs involved; given this, systems could be developed and demonstrated for multi-benefit sustainable farming with forestry. This could lead the way towards establishing more environmentally-friendly, integrated land use within Wales.

### References

1 Linnard, W. (2000). *Welsh woods and forests: a history*. Gomer Press, Llandysul, Ceredigion.

2 Rees, W. (1924). *South Wales and the March, 1284-1415. A social and agrarian study*. Oxford.

3 Good, J.E.G., Humphreys, J.W., Masters, P., Willis, R.W.M., Clough, D., Harris, I., Nixon, C.J., Norris, D.A., Radford, G.L. & Thomas, T.H. (1995). *Upland Woodlands in Wales*. Report to Countryside Council for Wales. Institute of Terrestrial Ecology, Bangor.

4 Edwards-Jones, G. (2000). *Options for improving integration between agriculture and forestry*. In: *The Wales Woodland Strategy: Sustainable Forestry*, edited by P.A. Stevens. Report to the Countryside Council for Wales. Centre for Ecology and Hydrology (formerly ITE), Bangor.

5 Hulbert, I., Waterhouse, T., Gordon, P. & Morgan-Davies, C. (1999). *Silvi-pastoralism for the uplands of Scotland – a new approach to an old problem. The integration of farming and forestry*, Scottish Forestry 53, 231-235.

**Professor John Good** was until recently Director of the Welsh station of the Centre for Ecology and Hydrology (formerly the Institute of Terrestrial Ecology) in Bangor. He holds an honorary chair in Environmental Forestry in the University of Wales, Bangor, and is currently Chairman of the Forestry Commission Advisory Committee for Wales, which he represents on the NAW Welsh Woodland Forum.

## Adfer y cyswllt coed

Mae cyfle i adfer y gydberthynas rhwng ffermio a choedwigaeth ac ailddarganfod hen werthoedd. Mae'r angen am ddiwygio CAP, safonau newydd ar gyfer coedwigoedd cynaliadwy, Tir Gofal, a'r incwm isel o bren meddal confensiynol i gyd yn chwarae rhan.

Dechreuodd dirywiad y drefn integredig ar ôl diddymu'r mynachlogydd, gan gyflymu gyda sefydlu'r Comisiwn Coedwigaeth yn 1919 ac ysgogiadau treth a arweiniodd at blannu coed bythwyrdd.

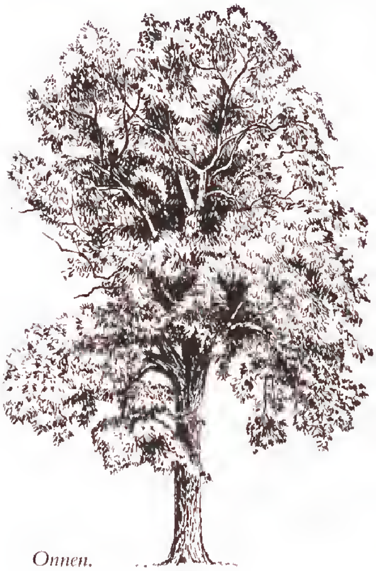
Mae'r rhwystrau'n cynnwys:

- gor-bori gan ddefaid
- grantiau yn ôl y pen ar gyfer tir pori
- cynlluniau coedwigaeth sy'n cau anifeiliaid allan
- prisiau isel cynnyrch coed
- awydd ffermwyr mewn argyfwng i gael atebion cyflym.

Mae syniadau'n cynnwys rhoi mwy o anogaeth i integreiddio coed a ffermio trwy Tir Gofal a chynlluniau sy'n annog defnydd o goed i helpu gweithgareddau ffermio yn hytrach na'u disodli. Mae angen ffermydd arddangos ac ymrwymiad tymor hir gan y Cynulliad a'r gwahanol gyrff cyhoeddus perthnasol.

# O **Bantycelyn** *i* **Gaseg Falltraeth** – *enwau lleoedd*

*Er i Syr John Morris-Jones rybuddio taw neb ond ffyliaid fyddai'n ceisio esbonio enwau lleoedd, mae'r demtasiwn yn ormod i* **Handel Jones**. *Mae'n ddigon ffodus, fodd bynnag, i allu manteisio ar ymchwil ac arbenigedd eraill wrth ystyried ambell enw lle sy'n gysylltiedig â byd natur.*



*Onnen.*

Mae'r cysylltiad rhwng nodweddion ym myd natur ac enwau lleoedd yn aml yn hollol amlwg. Er enghraifft, mae dylanwad enwau coed yn drwm yng nghefn gwlad.

Un o gartrefi enwocaf Cymru yw *Pantycelyn*, ger Llanymddyfri, sef y ffermdy a fu'n eiddo i'r emynydd William Williams. Fel Williams Pantycelyn, neu hyd yn oed Pantycelyn, yr adwaenir ef hyd heddiw. Gellir rhestru cysylltiadau fel hyn gyda'r gelynnen a choedydd eraill, ac yn wir sawl planhigyn arall.

## Coed a phlanhigion

**Celynnen:** **Llwyncelyn**, pentref yng Ngheredigion. **Clynnog** yn Arfon – ystyr y lle yw 'lle â llawer o gelyn'. Mae'r terfyniad **og** (yr un fath ag os) yn golygu digonedd.

**Bedwen:** **Bedwas** (yr **os** yn troi'n **as**). Plas **Penbedw** a Mynydd **Penbedw**.

**Derwen:** **Derwen-fawr**, **Derwen-gam**, **Derwen-las**. Yr un goeden sydd yn Aber**dâr**.

**Helyg:** **Penhelyg** a **Llyn Helyg**.

**Collen:** **Castell Collen** a **Llangollen** – er bod rhai'n awgrymu taw person oedd Collen.

**Draenen:** **Castell Draenen** yn Sir Benfro, **Ddraenen Wen** ger Pontypridd a **Ffynnon Ddrain** yn Sir Gaerfyrddin.

**Onnen:** **Maesyronnen** ym Maesyfed, un o gapeli ymneilltuol cynharaf Cymru.

**Eithin:** **Pen Tas Eithin**, mynydd yn Sir Gaerfyrddin, pentref **Cefneithin** ac ardal o'r enw **Tyn'reithin**.

**Ysgallen:** **Pantysgallog**, ardal ym Merthyr Tudful. **Bodysgallen**, hen blasty ger Llandudno.

**Cawl:** Yn **Porth-cawl**, mae'r **cawl** yn fath o fresych môr, yr un elfen ag a geir yn *cauliflower* yn Saesneg.

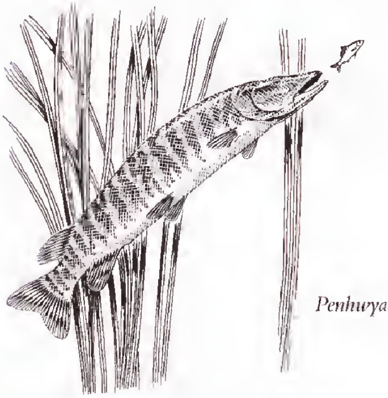
**Craf:** Garlleg yw'r **craf** ac mae i'w weld yn **Crafnant** yn nyffryn Conwy ac **Aber-craf** ym Mrycheiniog.

Mae mathau o gynefin hefyd yn rhan o enwau. Mae **rhos** i'w weld yn **Rhosllannerchrugog**, **Rhosymedre**, **Rhostyllen**, **Rhosesni** a'r **Rhosddu**. 'Ger-y-berth' yw ystyr **Arberth** yn Sir Benfro a 'ger-y-coed' yw **Argoed** yng Ngwent.

## Anifeiliaid

Yn yr un modd mae creaduriaid cefn gwlad Cymru i'w gweld a'u clywed mewn enwau lleoedd.

**Gele:** **Llyn y gele**, **Pwllygele**, **Llyn-gelod** a **Llyn y gelen**.



*Penhwyad.*

**Pysgod:** **Dinbych y Pysgod** – atgof o'i bwysigrwydd fel porthladd pysgota. Pysgotwr fach a **Pysgotwr fawr**, dwy afon yng Nghaerfyrddin a Cheredigion.

**Blaidd:** **Pwll y blaidd**, **Cas-blaidd**, **Ffos y bleiddiaid** a **Bleddfa** – atgof o anifail nas gwelir yno bellach.

**Cwn a llwynogod:** **Trecwn**, **Carnedd y filiast**, **Llynnau'r cwn**, **Carreg Cadno**, **Cwrtycadno** a **Carn Fadrun**.

**Ceirw a geifr:** **Cerrig yr Iwrch**, **Moel yr Hydd**, **Godir-y-Bwch** (godir = gwastadedd neu lethr). **Gwern Geifr**, **Carn y geifr**, **Foel y geifr**.

**March/caseg:** **Marchnant**, **Bwlch y gaseg**, **Nant Stalwyn** a **Caseg Falltraeth** – hon yn graig ym Môn sy'n debyg i'r anifail, a gerllaw mae nifer o greigiau llai a gafodd yr enw **Yr Ebolion**.

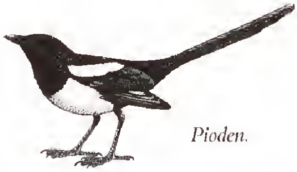
**Moch:** **Llanrhaeadr ym Mochnant**, **Mochdre**, **Nant y moch**. Afonydd **Twrch**, **Banw** a **Hwch**, y gyffelybiaeth â moch (yn ôl Syr Ifor Williams) oherwydd eu bod yn rhychu eu ffordd trwy'r tir.

**Gwartheg:** **Cas-fuwch**, **Llyn y Tarw**, **Porth Ychen**.

**Defaid:** Prin yw'r rhain ond mae gennym **Craig yr Hyrddod** a **Carn yr Hyrddod**.

**Brain:** **Carn y Gigfran**, **Carreg y Frân**, **Cwmbrân**, **Cyrn y Brain**, **Llys-y-frân** a **Brenig** (brân fechan).

**Adar eraill:** **Caergeiliog**, **Croes y Ceiliog**, **Copa ceiliog**, **Croes-y-mwyalch**, **Llys-y-dryw**, **Nant Gwennol**, **Nanteos**, **Ynys Gwylan**, **Carn gwcw**, **Pant-y-gog**, **Pentrepiod** a **Llwynypia** (piod eto).



*Pioden.*

## Enwau tywyll

Yr enwau mwyaf difyr hwyrach yw'r rhai nad yw eu cyswllt â natur yn amlwg ar yr olwg gyntaf, neu eu bod yn hollol gamarweiniol. Ffarm oedd y **tre** yn **Trebanos** yng Nghwm Tawe, a phlu'r gweunydd, pân, yw'r **ban**. Llawer o rug yw ystyr **Y Rhigos**, ger Hirwaun, ond beth yw ystyr plwyf **Morfil** yn Sir Benfro? Cafodd ei enw yn fwy na thebyg gan y Normaniaid er cof am leoedd o'r enw **Morville** yn eu gwlad enedigol.

Nid yr ele sydd yn **Abergele** ond llafn cled dyf neu waywffon. Ac nid march sydd yn **Marchwiail** yn Sir Ddinbych ond gwiail cryfion – gall march olygu rhywbeth mawr neu gryf. Llwybr ceffyl yw ystyr **Epynt** a hefyd **Olmarch**. Yn Epynt mae **ep** yn golygu ebol.

Gellid meddwl fod ystyr **Cwmrhydyceirw** a **Ffynnongroyw** yn hollol amlwg. Ond nid cyfeirio at geirw y maent. **Cwmrhydycwrw** a **Ffynnonycwrw** oeddynt yn wreiddiol ond parchuswyd yr enwau o dan ddylanwad y mudiad dirwest yn y 19eg ganrif, gan ddileu'r cyfeiriad at gwrw.

Yr anner yn **Cwmpenanner** yw heffer, a Muallt yn **Llanfair-ym-Muallt** yw cyfuniad o bu, (gwartheg) a gellt (gwellt), sef porfa gwartheg.

Mae'n debyg mai **Moel Ehedog** yw'r ffurf gywir am **Moel Hebog**, ger Beddgelert. Cyfeiria at adar yn gyffredinol yn hytrach na'r hebog. Nid paun chwaith sydd yn **Castell-paen** ond cysylltiad â Norman o'r enw Pain fitz John.

## Tynnu at derfyn

Yn **Penderyn** mae cyfeiriad at yr arfer o roi pen aderyn ar bolyn i ddynodi ffin neu fan cyfarfod. Defnyddid pen anifail weithiau hefyd ac mae'n bosib mai dyna sydd yn **Penporchell** a **Pen-hydd**.

### Cydnabyddiaeth

Isod, rhestrir enwau'r arbenigwyr y bûm yn elwa ar eu harbenigedd. Mawr yw fy nyled iddynt: B.G. Charles, Bedwyr Lewis Jones, Deric John, Anthony Lias, Richard Morgan, Hywel Wyn Owen, Gwynedd O. Pierce, R.F. Peter Powell, Tomos Roberts, R.J. Thomas, Syr Ifor Williams.

Mae **Handel Jones** yn awdur a chyfieithydd hunangyflogedig sy'n byw yn Rhandir-mwyn, Sir Gaerfyrddin.

## Summary

Place names have been described as 'linguistic fossils' which can offer an insight into various aspects of the past. Welsh place-names contain a wealth of references to the natural world which can be very obvious or quite obscure or misleading.

Plants, particularly trees, and animals often provide the source of many place-names. **Llwyncelyn** means a holly bush and **Derwen-gam**, the crooked oak. **Llyn Helyg** suggests a lake surrounded by willow trees and **Porthcawl** a port or harbour in a place where wild cabbages grow (compare English *cauli*flower).

There are numerous names of lakes containing **gele**, the leech, which obviously lived there in profusion e.g., **Llyn-y-gele** and **Pwllygele**.

**Nanteos** is the nightingale's stream while **Carreg y Frân** is the crow's rock. Animals no longer seen in Wales are also remembered in names such as **Pwll y Blaidd** (the wolf's pool).

Not all meanings are as transparent. For instance, **Cwmrhydyceirw**, the valley of the deer's ford, is no such thing. The ending **-ceirw** (deer) was originally **-cwrw** (beer). The change was made by members of the temperance movement in the 19th century to make the names more respectable.

**Morfil** (whale) in Pembrokeshire does not refer to the marine mammal at all. It is likely to have been named by Norman settlers after a place called Morville in their native land.

**Penderyn** (bird's head) refers to the practice of placing a bird's head on a pole to denote a boundary or meeting place.

# Forest feeders – *the rôle of big animals in woodland*

Photo: Lock Kuiters.

*Heck cattle have been bred back to resemble the now extinct aurochsen.*

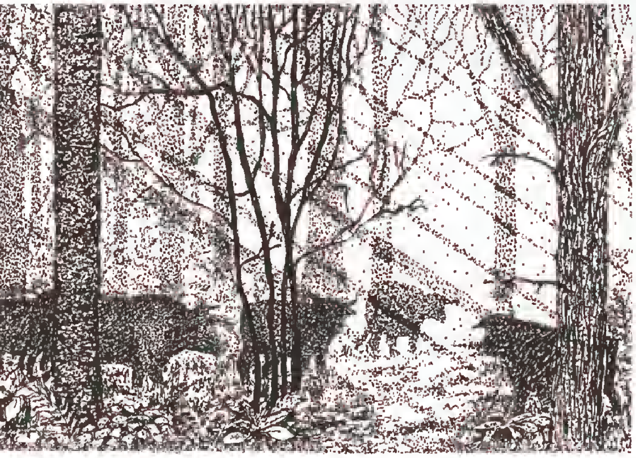
*The notion that forests consist of nothing but stands of trees is a modern one. The ancient forests of Wales contained a matrix of open spaces created by large herbivores.* ***Jim Latham*** *examines the beneficial role that big animals could play in today's forests.*

Grazing animals in woodland are often thought of as a bad thing. They eat tree seedlings, which means that trees may not be replaced when they die, and a wood may slowly disappear. This view is understandable in Wales, where many woods have been intensively grazed by sheep over the past century. The logical response has often been to fence woods to exclude all livestock. This usually does promote regeneration and growth of the ground flora, but in terms of woodland structure and diversity it really just replaces one artificial situation with another. The forests of Wales were once far more complex systems!

The animals, plants and other organisms of temperate forests have evolved together for tens of millions of years. Large herbivores would always have been present, and other species have evolved with them developing ways to co-exist, or even becoming reliant on them. The forests of Wales since the last Ice Age have held many large herbivores, including elk, red deer, roe deer, aurochsen (extinct wild cattle), wild boar and beaver, and each would have had different effects on the composition and structure of the forest and its biodiversity.

The most obvious way that large herbivores affect forests is by feeding on vegetation. This changes the competitive balance between plant species, allowing more species to co-exist than would be possible in the complete absence of grazing. Herbivores vary in their feeding ecology.

For example roe deer can be highly selective browsers, seeking out the most nutritious shoots and leaves, whilst red deer have rather broader tastes, taking food items in more equal measure. Aurochsen, like cattle today, were more dedicated grazers and would have fed on the forest floor, encouraging grassy swards to develop and maintaining open glades and clearings. These differences in feeding behaviour mean that the fortunes of individual plant or tree species, as well as vegetation structure, depend on the herbivores present and their relative densities. The effects can be far reaching, even dictating the composition of the forest canopy. There is evidence that large areas of southern Sweden have changed from broadleaved to coniferous forest over the last millennium because of an increase in the ratio of browsing to grazing animals.



But direct feeding is only one way that large herbivores have an effect. Deer strip bark and fray branches, encouraging the development of deadwood and changing the growth form of trees and shrubs to create new microhabitats. Beavers fell mature trees, opening up riversides and creating new pools, waterways and species-rich meadows. Large herbivores create bare soil through their trampling, wallowing and rooting activities. Bare soil is important as a seed bed for trees and other plants that are not able to establish in plant litter, and also provides a specialist invertebrate habitat. Wild boar are especially influential, and in many parts of Europe still diversify forest floors with their distinctive ploughing activities. Dunging from all herbivores contributes to nutrient cycling, and generates small-scale variation in soil conditions and the plant communities that grow on them. Dung can also be a habitat in its own right, supporting specialist fungi, bryophytes and whole communities of dung flies and beetles, which in turn are important as food for bats. Seeds can be dispersed in droppings and on animal coats, allowing occasional, but crucial, long-distance colonisation by otherwise sedentary plant species. Even the herbivores themselves are habitats, as hosts for all manner of parasites and biting flies, and after death for carrion beetles and other organisms of decay.

The effects of herbivores are complicated by their interactions with each other – there is evidence that deer species compete and influence each other's behaviour and even population densities. Then there is the issue of predators. Wolves, bears, lynx and fox were all part of the large mammal community of post-glacial Wales, each affecting the densities of herbivores, and in subtly different ways. We also have to consider human impact. People were present in Wales from the end of the last Ice Age (and intermittently throughout much of it, but that is another story!), and as proficient hunters would have influenced large mammal populations even before the forests re-established.

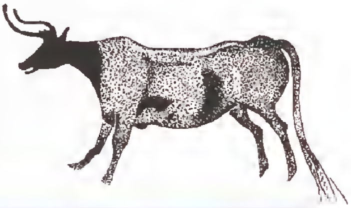
The post-glacial forests of Britain have traditionally been thought of as dense and impenetrable 'wildwood', covering the whole land surface except the highest peaks and wettest ground. But this interpretation has its doubters; forests throughout northern Europe may have been much more open, and perhaps even park-like in structure. The Dutch ecologist Frans Vera has formalised these ideas in his recent book *Grazing Ecology and Forest History*, which has generated lively debate among forest ecologists and conservationists throughout Europe. He combines information from many fields of study to show how high densities of grazing animals can maintain a dynamic mosaic of habitats within the landscape. Starting from open, heavily-grazed grassland, he suggests that thorny scrub will eventually establish, which will protect tree seedlings within it from grazing. These grow, and when mature shade-out the scrub to leave groves of trees with an open under-storey. These trees ultimately die and decay, allowing habitats such as grassland to re-establish and the cycle to be repeated. Although we may never know how true this vision of our prehistoric forests really is, the arguments around it are important for emphasising the potential of large herbivores as drivers of natural ecosystems.

With either heavy sheep grazing or total stock exclusion common in Welsh woods today, they no longer have their former structural and biological diversity linked to the activities of large mammals. So what can be done to improve the situation? There is much talk about species reintroductions, but for the most part re-establishing large mammal communities into our highly modified and populated country is a non-starter. But there are opportunities to improve things with more imaginative use of livestock and woodland management. A very low density of sheep in a woodland is likely to be more valuable than none at all. This may be hard to achieve in small woods because so few animals are involved, so perhaps we need to consider larger grazing units than we are used to. Sheep may not use a large wood uniformly, but concentrate grazing in some areas whilst rarely venturing into others. In this way, natural gradations of structure might develop. This idea is being used in a section of Coedydd Aber, north Wales, where moderate grazing is needed to allow enough light penetration for rare and sensitive lichen species, but where tree regeneration in some locations is also required.

Although they clearly have a role to play, sheep are not really the best grazing animal for woodland, with no claim to being native. Cattle are more ecologically compatible, and provide a convincing analogue to our lost aurochsen. Similarly, pigs may reproduce some of the effects of wild boar, and there is scope for cautious experimentation. Our native deer became extinct hundreds of years ago but, along with introduced deer species, are now recolonising many parts of Wales. At high densities they are notorious woodland pests, but if we could maintain them at low densities they would add to natural woodland processes. We may even be able to replicate the effects of long-lost animals ourselves. In coppicing riverside trees like alder and willow we may create effects comparable to the activities of beavers.

There is still much to be learned about optimum grazing densities and combinations of animals in different woodland types, and the positive and negative effects on different species groups. We are slowly gaining this information and, perhaps as importantly, we are becoming more willing to include large herbivores in our plans for woodland conservation and management.

**Jim Latham** is Woodland Ecologist with the Countryside Council for Wales.



## Pori i gadw'r coed

Mae angen anifeiliaid mawr i bori mewn coedydd – ar waetha'r gred eu bod yn eu lladd trwy fwyta coed ifanc. Roedd anifeiliaid o'r fath yn rhan naturiol o goedwigoedd ar hyd y canrifoedd – o geirw i wartheg a baeddod gwyllt. Mae eu patrymau amrywiol o bori yn arwain at fwy o amrywiaeth o blanhigion. Trwy fwyta rhisgl, sathru pridd, tyrchu a thomi, maen nhw'n creu cynefinoedd ychwanegol.

Heb ail-gyflwyno rhywogaethau, gallwn wneud llawer gydag anifeiliaid fferm a rheolaeth ddychmygus. Mae ychydig o ddefaid yn well na dim ond mae gwartheg a moch yn fwy amgylcheddol addas. Mae llawer i'w ddysgu ond rydyn ni'n barotach i ystyried fod gan lysfwytawyr mawr rôl i'w chwarae yng nghadwraeth y coed.

# Snakes *alive*

*There is much that we can do to help the elusive grass snake: constructing nesting sites, managing habitat, and, not least, recording where they occur.* ***Liz Howe*** *recalls some encounters with grass snakes, unveils the private life of Britain's largest reptile, and asks for reports of any sightings.*

My best views of grass snakes have mostly been along the coasts of Wales. On one occasion I was walking a section of the southern Llŷn coast counting seabirds, when on stepping around a rock I disturbed a basking grass snake which shot off down towards the edge of the cliff. At one site I have been shown in central Llŷn, the grass snakes share a roadside bilberry bank with green hairstreak butterflies. The adjacent ditch and wet grassland obviously provides good amphibian populations, and the sheltered bank is wide enough to give good basking sites. Disturbed snakes will speedily dive down into the ditch and swim away.

My most frustrating encounter with this species has been at Cors Erddreiniog National Nature Reserve. This large valley fen on Anglesey provides ideal habitat for grass snakes; wet grassland, pools, piles of vegetation and huge numbers of amphibians. There are ample places to lie out and bask, but the smell of grass snake is my only evidence so far. When frightened or attacked, grass snakes can emit a disgustingly smelly fluid from their cloaca, which has been described as super-strong garlic, but actually contains asafoetida and faecal matter. This substance is very persistent and an effective deterrent to further attack. I don't know what had caused this snake to produce its stink bomb, but at least it gave me a record for this site.

Grass snakes are less commonly seen than adders, perhaps choosing to bask in less obvious places, or retreating to cover more readily, rather than relying on camouflage when approached. In Great Britain they are concentrated in the warmer south and east; in Wales the population is based particularly around the western coasts.

Photo: L.J. Colley.

Photo: Mike Hammett.

## Grass snake facts of life

Grass snakes can grow up to 5 feet in length, but are usually about 3 feet long, very slender and streamlined. The body colour is typically olive-green with black bars on the flanks and a row of black spots along the back. The main distinguishing mark is the yellow and black collar behind the head. The overall colour can be quite variable, with very dark or very pale individuals occurring, but the neck mark is usually quite obvious.

The diet consists mainly of wetland species, particularly frogs, toads, newts and fish, all of which are actively hunted on land and in the water; grass snakes are excellent swimmers. They may also take small mammals and nestling birds, as well as slugs and worms. Prey items are not poisoned or throttled, just seized in the jaws and swallowed whole.

*Grass snake.*

In addition to habitat that supports its prey, grass snakes need suitable conditions in which to lay their eggs. The grass snake and the Aesculapian snake (*Elaphe longissima*) are the only European snakes that rely on the heat generated by decaying vegetable matter to incubate their eggs. All other species retain them inside the body and use their own thermoregulatory behaviour to seek warm places and bask. This somewhat restricts the places where grass snakes can live, but relieves them of the burden and danger of carrying eggs for several weeks each year. Females seek out compost and dung heaps in June or July, but will also use piles of grass, reeds, sawdust, wood shavings, peat, flood debris and even seaweed on the top of the beach. There is a collection of about 250 eggs in the Natural History Museum in London, taken from one nest in Pwllheli (Smith, 1951); these were probably the result of several females using the same nest.

The three *New Naturalist* books published by Collins, which are devoted to reptiles and amphibians, provide an excellent illustration of the development of the science of herpetology in Great Britain. Malcolm Smith's seminal work of 1951 has a wonderful factual text containing many of his own observations of these beasts and provides a good basic outline of taxonomy, biology, distribution and behaviour, but has no mention of population declines even for the rare species (sand lizard, natterjack toad and smooth snake), nor of anything positive that can be done for conservation. By contrast, Deryk Frazer's book of 1983 has 11 pages devoted to the problems of habitat loss and fragmentation, particularly for the rare species. By 2000, Beebee and Griffiths' book devotes over 30 pages to the subject, reflecting the continued loss of habitats and the need to protect rare species, but also indicating the expanding research into habitat and species management of the widespread species.

The amount of distribution data we have for Wales is particularly poor and I am taking this opportunity to request records of grass snakes that readers may have made over the years in order to get a more accurate picture of their past and current distribution in the country. Instructions at the end of this article detail what is required and where to send it.

## Practical help for grass snakes

One way to improve the conservation status of this species is to provide it with suitable habitat for nesting sites and maintaining feeding habitat. It is very easy to construct a laying heap, success depending as much on the location as on the contents.

Photo: L.J. Colley.

*Cors Erddreiniog, ideal habitat for grass snakes.*

The nesting site is best located near to suitable feeding habitat such as a secluded sunny area near to rough grassland, marsh, meadows, ponds or slow flowing rivers and streams; anywhere that a frog or newt is likely to be found. The site chosen should be in sunshine for at least part of the day, but protected enough from disturbance by people or vehicles to ensure a safe and quiet environment for adults and hatchlings.

The heap of vegetation should be made from material found close at hand; leaves in parks and woodland, cut grass or rushes in meadows and marshy grassland, reeds in wetlands, manure on farms, compost in gardens or allotments or even sawdust near wood yards. The heap needs to have good aeration and a good moisture content to prevent the eggs from drying out. The base of the heap should be made up of branches or other coarse, woody material, to ensure an air supply through the base. The rest can then be layered on top using the soft material to hand, mixed with twigs and prunings to provide a structure that the snakes can squeeze into, as well as compostable material to provide the heat. The top should be finished off with dry material such as grass to seal in the heat and moisture. The heap needs to be ready for egg laying by June, so should be constructed during the spring, to enable the snakes to find it. These heaps could be used for several years, after which new ones should be constructed near by. Existing heaps can be replenished, but with care, as they may also be used as hibernacula from October to April.

The size of the heap depends to some extent on the amount of material you have available, but the bigger the better; they generate more heat and maintain a more consistent temperature and provide more space for more eggs. The minimum size should be at least 1.6m x 1.2 x 1m high.

As well as providing suitable nesting sites, appropriate habitat management of the surrounding area can benefit the grass snake and its amphibious prey. Ensuring that ponds are not shaded out, whilst retaining a mosaic of tall and short vegetation with dense areas of cover, provides food and shelter for all amphibians and reptiles. Snakes hibernate in old banks, holes in the ground or very thick walls. Piles of logs or rubble covered with soil will provide extra cover that can be utilised by a wide range of animals.

## Send me your records

I would be grateful to receive any definite recordings of grass snakes in Wales, in order to improve the information we have available. The minimum requirement is for:

| | |
|---|---|
| **Date** | day, month and year of the observation |
| **Locality** | a 6 figure grid reference and nearest place name |
| **Recorder** | the name of the observer |
| **What was seen** | adult basking, swimming, egg, eggshell, juvenile |
| **Any other info.** | the habitat or the behaviour of the snake; any other species present at the same locality. |

Please send to:
Dr. Liz Howe, CCW, Maes y Ffynnon,
Penrhosgarnedd, Bangor, Gwynedd LL57 2DN

**Liz Howe** is Herpetologist and Species Team Leader with the Countryside Council for Wales.

### References

Froglife. (1995). *Conserving Grass Snakes. Advice Sheet 6.* Halesworth, Froglife.
Gent, T. and Gibson, S. (Eds) (1998). *Herpetofauna Workers' Manual.* Joint Nature Conservation Committee, Peterborough.
Langton, T. (1989). *Snakes and Lizards.* Whittet Books.
The *New Naturalist* series, Harper Collins, London:
Beebee, T.J.C. and Griffiths, R.A. (2000). *Amphibians and Reptiles, a natural history of the British Herpetofauna.*
Frazer, D. (1983). *Reptiles and Amphibians in Britain.*
Smith, M. (1951). *The British Amphibians and Reptiles.*

# A patchwork of nature – *farming for wildlife*

*Hay meadow flowers.*

*Since 1987 the Shared Earth Trust has been conducting a unique experiment in a corner of the Ceredigion countryside: restoring wildlife on a Welsh farm and recovering the real answer to reversing the decline of farmland biodiversity.* ***Barbara Taylor*** *and* ***Angie Polkey*** *explain.*

*Broad-bodied chaser.*

If you're over 50 you'll probably find it relatively easy to call to mind the image of a traditional wildflower meadow. Picture the various flowers, with their colours and species changing through the Spring and Summer, and the beautiful seed heads of wild grasses, rippling pink and mauve in the wind. Add to this memory butterflies dancing over the flowers accompanied by bees and grasshoppers, filling the meadow with endless sounds of life. You may also recall the scent of wildflowers or cut hay from a summer's afternoon spent lying or playing in such a meadow.

But if you're under 50, and especially if you are a lot younger, you may never have experienced such wonders. Since the Second World War we've lived through a massive revolution in the countryside. It has destroyed millions of acres of wildlife habitat and a major part of our national heritage. This has happened so quietly and so gradually that most people haven't noticed. More recently, BSE, Foot and Mouth and GM scares have prompted the public to sit up and ask questions about the ways of modern farming.

Even so, though we may regret the demise of hay meadows and fear for the quality of our food, returning to a countryside managed entirely by non-intensive, wildlife-friendly methods is but a dream. Some form of intensive production is likely to be with us for a very long time and the large blocks of monoculture – be they rye-grass, oilseed rape, wheat or whatever – will remain a feature of our landscape for the

*Highland cows.*

foreseeable future. But what if, instead of blanketing the land, these areas became just one part of a varied patchwork that includes a mosaic of less intensively managed land linked across the landscape? This could herald the restoration of biodiversity to our countryside and the return in strength of many species once common but now sadly under threat.

This is the message of the Shared Earth Trust after fifteen years of running a pioneering conservation experiment on Welsh farmland. Recognising the inevitable continuation of intensive farming on some agricultural land, the Trust focuses its attention on the remaining areas, which can be restored for the benefit of wildlife and humans alike. The Trust does this in a unique way – by promoting the vital role of Nature in leading the restoration process. This essentially means letting go, and not deciding exactly what the outcomes will be, but trusting that, given a light but helping hand and enough space and time, Nature can restore biodiversity for itself without huge inputs by humans.

The Trust's experiment at Denmark Farm began in 1987. Before then, this 40 acre livestock farm had been intensively managed and so highly degraded for wildlife that the then Conservation Officer for RSPB Wales, Dr Stephanie Tyler, described it as "a very barren place … very low in wildlife interest". The Trust's aim was to see whether this process of degradation could be reversed without major interventions or capital expense and to monitor the speed and extent of the return of wildlife. Reinstating more traditional grazing regimes, haymaking, reversing drainage, stopping most fertiliser inputs and fencing off overgrazed hedgerows, streams and ditches were all used to help 'kick-start' natural processes.

The results have been astonishing. After only ten years a leading conservationist, Dr Chris Fuller, described Denmark Farm as "a notable nature reserve in its own right" and our patron Jonathon Porritt called it "a beacon of hope in a sea of despair" showing just what could be possible if policies towards land use and food production were to change. The Trust's long-term monitoring programmes record the spectacular way in which wildlife has returned to Denmark Farm in response to careful programmes of habitat restoration, creation and management. For example:

- in 1985 only 15 species of bird nested on the farm, but now each year an average of 47 species breed here, including many species otherwise in decline such as linnet, reed bunting, bullfinch, song thrush, tree pipit, redpoll and marsh tit;
- the *density* of breeding birds has more than doubled since detailed surveys began in 1990, with a peak of 249 pairs on just 40 acres in 1998;

Photo: Mike Hammett.

*Bullfinches.*

- fields formerly dominated by rye grass are now rich in traditional flowers, grasses and sedges, with the most diverse meadow containing well over 100 plant species;

- butterflies such as green-veined white, large and small skipper, meadow brown, orange tip and ringlet have particularly benefited from the transformation of our pastures; 19 species are recorded on average each year, many more species and in much greater numbers than on neighbouring, intensively managed farmland;
- the lake, pond and field scrapes now support 14 species of breeding dragonfly and damselfly – a notable diversity in west Wales;
- formerly bare pastures are now rich in shrews, voles and mice, providing an all-year food source for an impressive range of predatory birds and mammals; summer populations can exceed 400 small mammals per acre in some fields;
- the rough pastures have an average population of 207 million ground invertebrates per hectare, compared to only 16 million in a rye-grass field – or 1,106 compared to only 86 under a pair of size 9 boots!

This and other data from Denmark Farm shows clearly that it is possible to reverse past losses and restore biodiversity, and that this can be achieved in only a relatively short time. We share the results of this research with academic institutes and conservation agencies far and wide. Its significance can be judged from RSPB Wales's evaluation.

"Despite the amount of money being put into agri-environmental schemes, and despite the wealth of environmental and agricultural research institutions in Britain, there is still a basic lack of knowledge as to how best to encourage increases in farmland biodiversity. Denmark Farm is one of the few places that is carrying out such work on a comprehensive and scientific basis".

The most significant thing is that all this has been achieved *without introductions* (apart from trees and shrubs planted to form shelterbelts and woodland) and *without prescriptive management* that favours any one species over another. This is perhaps the Trust's most vital contribution to conservation in the wider countryside. It embraces the role of Nature in allowing each habitat to establish its own constituents and complexity, its own web of life in its own timescale. And in so doing, it allows humans to relax the need for control and to see themselves as an interdependent part of the environment rather than wholly outside of it and solely responsible for its engineering.

*The lake at Denmark Farm.*

In reality, this is a much more pragmatic view of conservation, placing human beings firmly inside the web of life whilst recognising their need to make a living off the land alongside the survival needs of wildlife. So the Trust believes that even small scale upgrading of parcels of land, dotted in amongst the bright green or golden acres of monoculture, could make an enormous difference to the overall biodiversity of our countryside. These would be all the more valuable if connected by wildlife friendly corridors, providing vital stepping stones for species to spread back out from the richer 'islands' of nature reserves, Sites of Special Scientific Interest (SSSIs) and other unspoilt pockets of wildlife habitat. This approach allows Nature a greater hand in shaping the environment and recognises that we simply cannot control or predict the effects of every chance event ourselves. In this process we believe *everybody* with access to land, be it a small garden, allotment, smallholding or larger farm, can play a part. Upgrading the countryside as a whole means looking at every field, hedge or rough corner and seeing what can be done, however small, to improve it for wildlife. It means valuing every slight

*Hay meadow contrasts with intensively farmed land in the background. Inset: orange tip butterfly, brown hare.*

improvement even if it falls far short of the professional conservationist's ideal. Every landowner, even those committed to intensive production, could surely find some corners or small patches where the pressure could be taken off? Even a tiny percentage of most landholdings restored as wildlife habitat would add up to a huge acreage, all the more valuable for being spread across the land and interlinked rather than isolated.

Like many other organisations, we work to enhance biodiversity by persuading sympathetic landowners to improve their hedgerows, ditches, streams and field edges for wildlife, providing safe corridors to link sites together. The ultimate aim is to create a patchwork of sites of varying degrees of value for wildlife, interlaced by a network of rich corridors.

It is our belief that a biodiverse countryside is essential for the health of the environment upon which we, as humans, depend. This is why we advocate moving away from the idea of isolated nature reserves to a more integrated approach to restoring the health of the countryside *in its entirety*. We also believe that this is the best chance of long term, sustainable livings to be made from the land.

Arriving at this position has been a gradual process for the Trust and has involved a shift from the days when the Trust was founded and hoped to see major changes in farming practices due to the need to cut over-production. But perhaps the vision is now even more all encompassing, since the Trust's approach to restoration, which has proven to be so successful, simple and low cost, does not require enormous conservation expertise or resources to implement and manage. As such, it is accessible and relevant to all and, indeed, inspires many landowners every year to come on our training courses so that they too can realise the wildlife potential of their 'ordinary' land.

Finally, we must not forget the enormous value of *accessible wildlife* around us for future generations. Less than a hundred years ago rural people had a huge wealth of knowledge of their environment and how to work with wildlife for their own advantage. Today, we find many children and adults can only recognise a small handful of birds, plants and other wildlife, and certainly are not aware of its role in the web of life or in traditional lore. More frightening is that some children even fear wildlife as a source of danger or germs, often simply because it is alien to them. Bringing these youngsters closer to Nature, experiencing its wonder and sowing the seed of future positive action is another part of the Trust's vision: creating images, like those of the hay meadows, which are truly worth valuing and holding in our collective culture *and* creating in reality.

> “Today we went on a walk
> Through the fields of Denmark Farm.
> We brought a few things back in a box.
> But there were a few things we couldn't.
> Really, we did bring them back,
> In our imaginations.
> They were things like tadpoles, frogs,
> birdsongs, geese, ducks and other things.”

*From a school visit to* **Denmark Farm**

**Barbara Taylor** co-founded the Shared Earth Trust in 1987. **Angie Polkey** co-ordinates the Trust's training and dissemination programme.

## Arbrawf i adfer cyfoeth

Mae arbrawf yng Ngheredigion yn dangos sut y mae modd troi tir moel yn gyfoeth o fywyd gwyllt. Yn 1987 y daeth 40 erw Denmark Farm i ofal Ymddiriedolaeth Shared Earth, sy'n defnyddio dulliau traddodiadol, heb wario nag ymyrraeth sylweddol, i geisio hybu prosesau naturiol.

Ers hynny, mae'r newid wedi bod yn syfrdanol:

- Rhywogaethau adar yn codi o 15 yn 1985 i 47.
- Nifer yr adar sy'n magu wedi mwy na dyblu o fewn deng mlynedd.
- Mwy na 100 rhywogaeth o blanhigion yn un cae.
- Llawer mwy o loÿnnod byw nag ar ffermydd cyfagos.
- Cyfanswm o 14 math o weision neidr a mursennod.
- Mwy na 400 mamal bychan i bob erw yn yr haf.
- Y caeau'n cynnal 13 gwaith yn fwy o bryfetach na chaeau rhygwellt.

Mae Denmark Farm yn dangos fod modd adfer colledion y gorffennol yn gymharol gyflym ac mae'r wybodaeth yn cael ei rhannu'n eang gyda sefydliad ac asiantaethau. Y peth pwysicaf oll yw fod hyn wedi ei wneud trwy brosesau natur ei hun. Mae'r Ymddiriedolaeth yn credu y byddai rhwydwaith cysylltiedig o lecynnau bychain cyfoethog o'r fath yn gwneud byd o wahaniaeth ac yn well na gwarchodfeydd ynysig.

*Meadow brown.*

# **Bumblebees** – *bringing back the* **buzz**

*Several sites in south Wales are home to two of Britain's rarest bumblebee species; the shrill carder and brown-banded carder bees.* ***Claire Carvell*** *describes how work carried out by the UK Bumblebee Working Group is helping to reveal the current distributions and habitat requirements of these fascinating insects, and to inform their future conservation.*

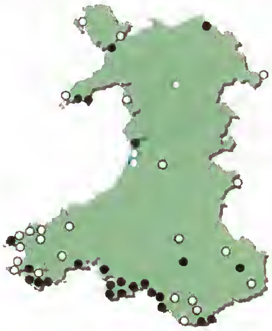
Photo: Mike Edwards.

*Shrill carder bee, Bombus sylvarum.*

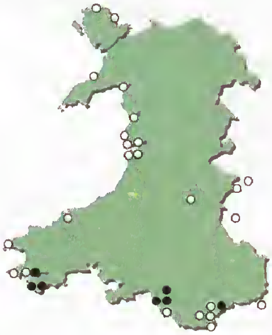
"Everybody knows the burly, good-natured bumblebee. Clothed in her lovely coat of fur, she is the life of the garden and of the modestly blooming wayside as she eagerly hums from flower to flower" wrote Frederick Sladen[1] in the early twentieth century. Yet today, bumblebees are not nearly such a familiar feature of the British countryside, having declined considerably in recent decades.

Only six of our seventeen true bumblebee (*Bombus*) species are still readily found over their pre-1960 range, and two may have become extinct during the twentieth century. The most likely reason for these declines is, not surprisingly, the loss of suitable habitat as a result of changes in land-use and agricultural practices. The removal of hedgerows, conversion from hay to silage production and intensification of grassland management have all led to the disappearance of the flower-rich habitats which provide foraging and nesting sites for bumblebees. Although these losses have been most severe in the arable regions of eastern and central England, many parts of Wales have also suffered. However, the story of one species in particular suggests that all is not lost and with the right conditions we can encourage this and other bumblebees back into the wider countryside.

**Bombus humilis**



**Bombus sylvarum**



Pre 1980 ○
Post 1980 ●

The shrill carder bee *Bombus sylvarum* is one of Britain's rarest bumblebee species, with populations in only four key areas across southern England and south Wales. It has been identified, along with four others, as a UK Biodiversity Action Plan (BAP) Priority Species for conservation action, which is being led by a group of entomologists forming the UK BAP Bumblebee Working Group. Until 1999, searches in Wales suggested that the shrill carder bee was found at only three sites on the south coast: Kenfig National Nature Reserve and Margam Moors SSSI near Port Talbot, and the Gwent Levels, at Newport. However a visit to Castlemartin Range, south Pembrokeshire, in August 1999 confirmed previous suspicions that the vast areas of flower-rich grassland, untouched by agricultural development for nearly 60 years, supported large populations of this bumblebee. These findings prompted further work to be undertaken at Castlemartin, Kenfig and Margam in the summers of 2000 and 2001, funded by CCW and WWF.

Photo: Claire Carvell.

*Bumblebees thrive at Castlemartin.*

## Ecology and habitat requirements – what we know so far

As its name suggests, the shrill carder bee is readily recognisable to the trained observer by its 'shrill' buzz and nimble flight, pale greenish-grey banding pattern and orange tail. The queen emerges from hibernation in late spring and, being a member of the subgenus *Thoracobombus* or carder bees, will construct her nest on or just below the ground surface out of grasses and mosses. She will often use the abandoned nests of small mammals for this purpose. As the colony matures workers leave the nest to forage, often over a wide area, for nectar as fuel for themselves and pollen for developing larvae in the nest. By September, the workers gradually die off as new queens and males are produced, and after mating, the new queens hibernate underground. In order to support viable bumblebee populations, the landscape must therefore provide favoured forage plants throughout the flight season (from May to September), areas of taller grassland as nesting habitat, and mating and hibernation sites.

Research at Kenfig NNR, Margam Moors and Castlemartin Range has involved not only estimating the number and distribution of bumblebees present, but also determining which components of the grassland are important for bumblebees, and the types of management that will maintain this habitat. Typically, we carry out repeated survey walks during the summer, recording all bumblebees present, the flowers on which they are seen foraging and any other plant species in flower at the time of each survey. Pollen samples have also been collected for analysis as these provide useful information on foraging behaviour that can be missed by observation alone. Aspects of vegetation structure are also recorded to assess the potential value of habitats for nesting.

Over four years we have built up a fairly clear picture of the habitat requirements of the shrill carder and other bumblebee species at the three sites. Flowers from the *Fabaceae*, *Lamiaceae* and *Asteraceae* families are particularly attractive, including yellow rattle, bird's-foot trefoil and kidney vetch in May and June, and black knapweed, red clover, red bartsia and devil's bit scabious (also bramble) as the season progresses. Some of these are especially important for the shrill carder bee because of their long corolla tubes. Being one of the long-tongued bumblebee species, along with the brown-banded carder bee *Bombus humilis* (also a BAP species but still fairly widespread along the coast of southern England and Wales), it is able to reach the plentiful nectar produced by such flowers, as well as collecting pollen and acting as a vital pollinator. In contrast the shorter-tongued bumblebees, which include several of our more common species, tend to forage at flowers with shorter corollae, which remain more widespread in the countryside.

The specific nesting requirements of any bumblebee species are hard to quantify, simply because of the difficulty in finding natural nests. However, an exciting discovery was made towards the end of the 2000 survey season at Castlemartin: a shrill carder bee nest of no more than four inches in diameter, tucked amongst the tall mesotrophic grasslands of the western range. Individual bees were marked with tiny numbered discs, and by recording their movements into and out of the nest we estimated the colony to number fewer than thirty workers. This suggests that a fairly high nest density would be required for strong populations of the species to exist. As yet, we have little chance of confirming these suspicions unless a more reliable means of locating nests, perhaps even with a well-trained sniffer dog, can be found!

Photo: Claire Carvell.

*Kenfig National Nature Reserve.*

Progress has also been made in our understanding of the range and distribution of the shrill carder bee in south Wales. As well as finding strong populations at the three 'core' sites already mentioned, we have spotted individuals at sites as far as eight kilometres away. In Pembrokeshire, workers were found at abundant patches of black knapweed and red bartsia on two farms to the north of Castlemartin Range, both of which are under extensive grazing management at part of the Tir Gofal farming scheme. This reveals the known distribution of the shrill carder bee in the region to cover almost 32 square kilometres, and suggests that it may be functioning much like a meta-population at this landscape scale. Meanwhile, in the Glamorgan region, workers and males of the species were discovered at Parc Slip Nature Park, an inland restored opencast mining site now managed by the Glamorgan Wildlife Trust. Here the flowering of sown species such as devil's-bit scabious, and patches of red bartsia and red clover in more disturbed areas, seem to provide sufficient forage to maintain a small population some distance from the main Kenfig and Margam sites.

## Conservation management to maintain populations

As well as being large sites which have generally escaped the intensive farming practices imposed on much of the countryside, Kenfig, Margam Moors and Castlemartin Range are all under similar management regimes which appear to be the key to providing suitable habitats for the rarer bumblebees. These involve extensive grazing by cattle or sheep mainly during the winter months, which opens up the grassland sufficiently to maintain flowering plant diversity and produce sources of nectar and pollen for the bumblebees from April to September. Cattle appear to be particularly effective as we've found at Castlemartin (and also on Salisbury Plain military training range in Wiltshire where *Bombus sylvarum* and *B. humilis* populations exist). The action of their grazing creates a more varied vegetation structure than that of sheep, with both flower-rich areas and taller, tussocky patches which attract the small mammals whose abandoned nests are used by the bumblebees.

It is important that management actions during the summer months of colony activity are really kept to a minimum. On the dune slacks and grasslands at Kenfig NNR, cutting is carried out on a rotational basis to avoid removing forage areas or damaging nesting sites simultaneously. However, potential problems have arisen where summer sheep grazing, which has always been a feature to help prevent scrub encroachment on the reserve, has led to a reduction of flowers available to bumblebees.

On smaller sites these issues are especially pronounced, as bumblebee populations may be more sensitive to change and the management requirements of other species may not be compatible with those of the bees. One example of this occurred at Parc Slip Nature Park in the year 2000, where heavy poaching by cattle to produce suitable habitat for nesting lapwing damaged the season-long supply of forage plants. This was compounded by Foot & Mouth restrictions not allowing the cattle to be removed early enough, together with a long, cold and wet spring. This type of disturbance is certainly necessary to promote one of the shrill carder bee's favoured forage plants, red bartsia, but not the long forage flower season required, and more careful consideration of the conservation needs of both lapwing and bumblebees will be taken from now on.

Photo: Mike Hammett.

*Lapwing on wet heath.*

The future for the shrill carder bee and brown-banded carder bee in south Wales looks promising, especially with opportunities for habitat restoration through the Tir Gofal agri-environment scheme becoming available in the wider countryside. These would ideally be targeted to farms within two to four kilometres of the known 'core' sites in Glamorgan and Pembrokeshire if they are to benefit the rare as well as common species. However, monitoring of existing populations and careful management of the core sites remains crucial. After all, we must ensure that the shrill carder bee will still be around to take advantage of any new habitat opportunities that become available.

**Reference:**

1 Sladen F.W.L. (1912) *The Humble-Bee, Its Life-History & How to Domesticate it, With Descriptions of all the British Species of Bombus & Psithyrus*; London : Macmillan & Co.

**Claire Carvell** now works as an ecologist in the Biodiversity Restoration and Management Group at the Centre for Ecology and Hydrology, Monks Wood.

If you would like further information on the BAP bumblebees in Wales or habitat management for bumblebees in general, please contact **Mike Edwards** at the UK Bumblebee Working Group, Lea-side, Carron Lane, Midhurst, West Sussex GU29 9LB.

## Gobaith i'r gwenyn gwyllt

Mae gobaith i ddau fath o gardwenyn yn Ne Cymru, yn enwedig os bydd ffermydd Tir Gofal, sy'n agos at dri safle allweddol, yn cael eu defnyddio i adfer rhagor o gynefinoedd addas. Newidiadau amaethyddol, yn arbennig colli gweiriau cyfoethog, sy'n rhannol gyfrifol am ddirywiad yr 19 math o wenyn gwyllt yng ngwledydd Prydain.

Fodd bynnag, yn 1999, cadarnhawyd fod poblogaeth o'r gardwenynen groch ym Maes Tanio Castlemartin yn Sir Benfro, yn ychwanegol at rai yng ngwarchodaeth natur Cynffig, ar SoDdGA Rhosydd Margam ger Port Talbot ac ar Wastadeddau Gwent. O ganlyniad i waith ymchwil pellach, darganfuwyd poblogaethau llai o'r cardwenyn ar safleoedd cymharol bell oddi wrth y rhain a dysgwyd mwy am eu harferion nythu.

Yn ogystal ag osgoi ffermio dwys, mae gan y tri safle drefniadau rheoli tebyg, gyda phori eang yn ystod y gaeaf yn rhoi cyfle i amrywiaeth o flodau sy'n fwyd i'r gwenyn. Mae'r llystyfiant hefyd yn amrywiol, gyda llecynnau o borfa dalach lle mae'r gwenyn yn nythu yn hen nythod mamaliaid bach. Mae angen rheolaeth a monitro gofalus i sicrhau fod y cardwenyn croch ar gael i fanteisio ar unrhyw welliannau cynefin yn y dyfodol.

# Restoring networks *of forest habitats*

Photos: Scott McG. Wilson.

*Woodland fingers can link up larger forest areas.*

***George Peterken*** *examines the concept of 'forest habitat networks' and how linking up areas of woodland can help restore our rich woodland wildlife heritage.*

We have long been used to the idea that forest habitats survive as remnants of a once almost unbroken primeval forest. In 1895 less than 5% of Wales was forested, and by the 1980s, ancient woodland – the supposed remnants of the original forest cover – had been fragmented into 5,770 separate woods, covering only 2.7% of Wales, 5,109 of which were 20ha or smaller[1]. Populations of forest-dependent wildlife species must have been greatly reduced, and many survive as a scatter of isolated sub-populations that remain vulnerable to the vagaries of habitat change.

Today, the Forestry Strategy for Wales[2] acknowledges the need for 'defragmentation' by expanding the forest area and re-connecting individual woods and forests in a forest habitat network. This need has also been recognised in Scotland and England[3]: it arises from the insights of landscape-scale ecology, and understanding of metapopulation dynamics, and a fear that species may have to alter their ranges to evade climatic warming. The question now is: what form should this network take?

## Defining the forest network

First we must consider what should count as a 'forest'? It is easy to equate this with green patches on the maps, i.e., ground predominantly covered by trees, but a better definition for large-scale conservation would be 'land in which tree-covered ground is not ecologically isolated from similar ground'. Theoretical considerations and field observations alike suggest that ecological isolation would be minimal at 30% cover, i.e., that 'forests' comprise land with at least 30% forest cover, reasonably well distributed. Thus, forest in a network could contain a majority of other habitats, rather more like a medieval than a modern forest.

Forest habitat networks consist of nodes and links, differentiated from a matrix of other habitats. The nodes are the compact, coherent blocks, whereas links are narrow corridors connecting nodes. At a large scale, nodes form Core Forest Areas (CFAs) (e.g., Coed y Brenin) and links are well-wooded corridors (e.g., Rheidol valley). At a smaller scale, nodes are individual woods and links are hedges and tree-lined streams. In practice, the forest cover of Wales cannot be resolved clearly into forest and non-forest, nor can forest be resolved unambiguously into core areas and corridors, but these concepts are worth keeping as reference points.

*Raven.*

The quality of the non-forest matrix influences the performance of forest-based species (e.g. red squirrel, raven). A high-quality matrix has a wealth of semi-woodland habitats, such as hedges, farmland trees, incised streamsides, rocky outcrops, marshes and herb-rich meadows, all habitats that support some forest species, or help them to move between patches of forest. A low-quality matrix has few, isolated semi-woodland habitats: intensively used lowland farms and overgrazed uplands are extensive examples. The effectiveness of a restored forest habitat network would be enhanced if farmland habitats were restored simultaneously.

The forest habitat network can also vary in quality. The most obvious difference lies between components dominated by 20th century conifer plantations and those dominated by ancient semi-natural woodland. Almost as important is forest structure. Specialist forest species tend to use young-growth and old-growth stands, leaving the middle-aged stands to generalists, and if these specialists cannot continuously find a well-distributed patchwork of young and old stands they will still suffer ecological isolation, even within a forest network. The old-growth specialists – saproxylic species – tend to be poor colonists, and thus the success-limiting group. For these species and for general diversity, foresters should maintain a full range of age classes throughout the network, and some old-growth stands linked by mature elements (retained large trees, large dead wood) within younger stands.

*Amanita muscaria.*

## Does Wales already have a forest network?

Forested cover in Wales has increased to 14%. Has this increase already generated a forest habitat network? The principal achievements have been a set of CFAs, such as Clocaenog, Gwydir and Coed y Brenin, formed by afforestation building out from a nucleus of long-established woods and plantations. Latterly, there has been some planting of new native woodland, Coed Cymru has helped to generate a variety of structure and age-classes in long-established native woodland, and the plantation forests have been diversified as age-class distributions have broadened and native species have spread. Many districts have achieved 30% forest cover. A few, such as the Lower Wye Valley, have never fallen below this threshold.

On the other hand, forest cover remains fragmented. In Snowdonia, forest of all kinds covers 15.1% of the land, but broadleaved woodland and scrub covers just 4.4% scattered in 2983 patches[4]. Moreover, there have been reversals. Some 5513ha of ancient woodland was cleared between the 1920s and 1980s, and 25917ha has been converted to plantations, mostly since 1945. The quality of the farmland matrix has been much reduced by intensification of both cultivation and pasturage, and by associated drainage and river engineering. Inevitably, perhaps, the new forests have endured a long period of biological poverty as they have passed through first-rotation monocultures, and some remain in this state. Moreover, the great majority of native woods and the populations of forest species they contain are still very small.

## So, what is needed now?

The Snowdonia study[4] suggested two main measures, converting some conifer high forest to broadleaves, and expanding small broadleaved patches. More generally:

- Continued improvement in the quality of new CFAs. Well-linked native elements, old-growth retentions, balanced age-distribution. Development and restoration of native woodland CFAs.
- Increased area of native woodland. The priority is the restoration of plantations on ancient woodland sites (PAWS) to native cover.
- New woodland of all kinds should be located next to existing woodland, thus creating larger individual woods.
- Restoration of large-scale habitat corridors along streams and rivers. Riparian woodland of all kinds mixed with other semi-natural habitats. Riparian corridors form the zone of greatest natural diversity, and they are the natural links and foci of species movement within the landscape.
- Continued diversification of native woodland structure and age-distribution by a sustainable rate of timber and wood utilisation.
- Restoration of habitats on farmland and upland pastures, including new trees and scrub. Promotion of a new kind of wood-pasture, especially in the oceanic districts west of the Cambrian mountain watershed.

## Wider implications

A forest network implies fragmentation of other habitats: if forests form a net, the others remain as holes in the net. This should not be a problem, for up to 70% of the land within a network would not be tree-covered. The mesh size of the net can be large, leaving large tracts of other habitats in between. If the main links are riparian, upland habitats will remain no less linked than they are naturally.

*Woodland and farmland, Nant Irfon.*

The concept of a forest habitat network brings together the familiar components of forest conservation into a broad and flexible perspective. Although the case for a network is developed on nature conservation grounds, networks would have considerable benefits for other interests.

More timber could be grown and harvested. Foresters would have greater flexibility in management, since wildlife populations would be more resilient and particular stands of trees would be less precious in the landscape. Riparian habitat corridors would improve water quality and fishing.

Put in more contemporary terms, a network offers opportunities for 'joined up thinking', not just between habitats, but also between all the multiple users of forests. It also promotes better integration between farming and forestry, and a coherent design for landscapes following agricultural retreat. Foresters and wildlife alike would be liberated from the partitioning implied by conservation designations and restrictions on management.

Forest habitat network works as concept rather like 'sustainability'. It can mean different things to different interests, and allows flexibility in the form it might take, but it has sufficient core meaning to promote environmental improvement.

### References

1 Spencer, J.W. and Kirby, K.J. (1992). *An inventory of ancient woodland for England and Wales. Biological Conservation, 62, 77-93.*

2 *Woodlands for Wales*. The National Assembly for Wales Strategy for trees and woodlands. Forestry Commission, 2001.

3 Peterken, G.F., Baldock, D. and Hampson, A. (1995). *A forest habitat network for Scotland*. RSM 44, Scottish Natural Heritage; Peterken, G.F.(2000). Rebuilding networks of forest habitats in lowland England. Landscape Research 25, 291-303.

4 Gkaraveli, A, Williams, J.H. and Good, J.E.G. (2001), *Fragmented native woodland in Snowdonia (UK):* assessment and amelioration. Forestry, 74, 89-103.

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## Cysylltu'r coed

Roedd coedwigoedd mawr yn arfer gorchuddio rhan helaeth o Gymru ond, erbyn hyn, dim ond darnau ynysig sydd. Mae Strategaeth Coedwigaeth Cymru yn derbyn fod angen ail-gysylltu'r darnau hyn a chreu rhwydwaith coedwigoedd. Yn fras, mae hynny'n golygu coedwigoedd sylweddol yn cael eu cysylltu gan goridorau fel dyffrynoedd coediog, neu goedydd llai gyda chloddiau neu nentydd coediog rhyngddyn nhw.

Er mwyn ffyniant rhywogaethau o greaduriaid yn y coedwigoedd, mae angen hefyd am fwy o amrywiaeth lled-goediog mewn tir amaethyddol. Elfen arall bwysig yw ansawdd coedwigoedd, gydag angen am gymysgedd o ran oedran y coed. Awgrymodd astudiaeth yn Eryri fod angen cymryd dau brif gam – troi rhai fforestydd bythwyrdd yn fforestydd llydanddail ac ehangu rhai llecynnau llydanddail.

Yn fwy cyffredinol, mae angen:

- gwella ansawdd rhai o'r prif fforestydd newydd
- adfer a datblygu prif fforestydd brodorol
- troi planhigfeydd ar safleoedd coedwigoedd hynafol yn goed brodorol
- sicrhau fod coedwigoedd newydd y drws nesa' i rai sy'n bod yn barod
- adfer coridorau coed hyd afonydd a nentydd
- amrywio strwythur ac oedran yn y coedydd brodorol
- adfer cynefinoedd lled-goediog ar ffermydd.

Er mai cadwraeth yw'r nod, byddai manteision eraill, o ran rheolaeth a chynnyrch, gwell pysgota a mwy o integreiddio rhwng ffermio a choedwigaeth.

# *Llên y llysiau* – **helyg Mair**

### *gan* **Twm Elias**

Llun: Twm Elias.

*Helyg Mair, mae modd defnyddio'r dail persawrus mewn sawl ffordd.*

Prosiect a gychwynnwyd gan **Gymdeithas Edward Llwyd** yw Llên y Llysiau i gofnodi pob math o gysylltiad rhwng pobl Cymru a phlanhigion. Mae'n ceisio casglu gwybodaeth am y rhywogaethau o dan nifer o benawdau, gan gynnwys tarddiad yr enw, cyfeiriadau llenyddol, enwau lleoedd, cofnodion hanesyddol, a'r defnydd o'r planhigion. Os oes gennych unrhyw beth i'w ychwanegu at y manylion isod, cysylltwch â **Duncan Brown** (rhif ffôn: 01286 650547 neu e-bost: dbrown.waunfawr@virgin.net).

Llun: Twm Elias.

*Helygen Fair yn ei blodau.*

## Enw Lladin

***Myrica gale* (L.):** *myrica* yn golygu persawr (*myrike* yn hen enw Groegaidd am y tamarisc, i'r hwn y mae'n debyg) a *gale* yn hen enw Saesneg am y planhigyn[1].

## Disgrifiad

Llwyni bychain collddail, yn aml yn tyfu'n glystyrau sy'n gorchuddio darnau helaeth o dir. Y blodau melyn-frown yn debyg i gynffonnau wyn bach byrion. Fe'u peillir gan y gwynt yn gynnar yn Ebrill a Mai. Fel arfer, tyf y blodau gwrywaidd a benywaidd ar blanhigion gwahanol. Gorchuddir y planhigyn â chwarennau bychain melyn, llawn persawr – tebyg i *eucalyptus* – sy'n gwneud y dail hirgrwn a'r blagur yn arbennig o aroglus.

## Cynefin a dosbarthiad

Yn tyfu yn bennaf ar weundiroedd yn rhannau gogledd orllewinol a mwy glawog Prydain ac Iwerddon[2]. Yn lled gyffredin yng Ngwynedd a rhannau o Fôn[3] ar dir na chaiff ei bori ond yn ysgafn. Cyfyngedig iawn mewn ardaloedd eraill o Gymru. Yn tyfu fel arfer gyda glaswellt y gweunydd (*Molinia caerulea*) a migwyn (*rh. Sphagnum*).

## Enwau Cymraeg eraill

Cwrli (Meirion), cwrlid (Meirion), bwrli, gwrling, gwrddling, gwyrddling, gwyrling, gydywydd, madywydd, madywydd bêr, madrwydd, mordywydd, myrtwydd y gors[4,5,6].

### Tarddiad yr enwau

Helyg Mair a gwrddling yw'r ddau enw grybwyllir yn adran lysieuegol *Y Gymraeg yn ei Disgleirdeb*, Thomas Jones, (1688), Llundain. Y mae amryw o blanhigion yn cynnwys “Mair” neu “y Forwyn” neu gyfeiriadau Beiblaidd eraill yn eu henwau – yn pwysleisio eu rhinweddau llesol yn ddiau. Mae cwrli a.y.b. yn ffurfiau ar gwyrddling tra bo madywydd a.y.b. a myrtwydd yn tarddu, mae'n debyg, o *Myrica* (Lladin) a *myrtle* (Saes.). (Nid yr un myrtwydd, gyda llaw, â'r planhigyn y cyfeirir ato yn y Beibl.)

### Enwau lleoedd

Cors Gwrli (Meirionydd); Gwern y Gwrlid ar dir Gellirydd, Llanaber, Meirion; Werglodd gwrlid yn Betws Bach, Llanystumdwy, Arfon.

### Defnyddiau

Yn y ddeunawfed ganrif, pan wehyddid brethyn cartref yn gyffredin yng Nghymru, defnyddid y rhisgl i liwio gwlân yn felyn[7]. Gwneid yr un defnydd ohono yn Sweden ac yn yr Alban[8].

Lle nad oedd hopys ar gael i roi blas chwerw ar gwrw defnyddid canghennau'r helygen Fair i'r un diben. Ond, yn ôl Thomas Parry, Glan y gors: “mae yn gofyn ei hir ferwi, neu y mae y ddiod yn chwannog o godi dolur yn y pen”[9].

Rhoddid y dail, wedi eu sychu, yn y cwpwrdd dillad i roi arogl hyfryd ar y dillad ac i amddiffyn rhag y pry dillad. “Cyn dyddiau'r moth balls doedd dim gwell i'w cael na dail helygen Mair rhwng y dillad i gadw'r gwyfynod neu'r pry cadach draw ohonynt.”[10].

Ceir amryw o gyfeiriadau at y defnydd o helyg Mair i gael gwared o chwain o welyau[11], e.e. “gosod canghenau o hono o amgylch y gwely, a yr ymaith y chwain”[9]. Ategir hynny gan un enw arno o Northumberland, sef *fleawood*[12]. Disgrifir ei ddefnydd i'r perwyl hwn yn fyw iawn gan Richard Adams, Abererch yn ei atgofion am weini fel gwas bach yn Crugan, Llanbedrog lle byddai'n lletya yn y llofft stabl yno ac yn cael ei boenydio'n arw gan chwain: “Hen le felly fyddai'r llofft stabal yn aml iawn. Mae gen i gof mynd, tua 1930, hefo'r hwsmon, William Davies, Dinas, i gors Rhyd John, Llanbedrog i hel helyg Mair. Roeddem yn mynd a fo i'w roi yn y matresi i gael gwared o chwain. Roedd y chwain yn casau ei oglau, ond wrth lwc roedd yn ddigon derbyniol i mi. Byddai William Davies yn ffyddiog iawn o rinweddau'r helyg Mair ac roedd o'n effeithiol iawn hefyd. Rwy'n cofio iddo ddweud un tro ei fod wedi llenwi'r fatres â'r dail: “a cael fy neffro 'n nos am ddau o gloch y bora gan ryw swn crafu mawr – y chwain yn methu mynd allan 'dan drws achan!”[13].

Llun: Mike Hammett.

*Gwridog y rhos, Cors Fochno.*

Mae'n dda rhag pryfed brathog yn yr haf. Ar Ynys Islay arferir crogi bwnsied o helyg Mair yn y gegin i gadw pryfed ymaith[8]. Mae'n arfer cyffredin gan rai i rwbio'r dail ar eu talcen, gwddw a garddyrnau, neu i roi sbrigyn o'r planhigyn yn y cap i'r un diben. Bydd pysgotwyr yn gwisgo sbrigyn ohono, os yw'n gyfleus ar gael, pan yn eistedd mewn cwmwl o wybed ar lan llyn neu afon yn Eryri.

Erbyn hyn mae cwmni o'r Alban (Scotica Pharmaceuticals) yn gwerthu eli o'r helygen Fair ar gyfer cerddwyr sy'n cael eu plagio gan y pryfed duon brathog Albanaidd[14]. Mae tyddynwyr ar Ynys Skye hefyd yn marchnata cynnyrch o'r fath dan yr enw Myrica[15].

Gellir tynnu cwyr o'r dail a'r brigau a'i ddefnyddio i wneud canhwyllau. Yng Ngogledd America defnyddir aelod arall o deulu Myrica, y wax myrtle neu'r helygen Fair gwyrog, i'r diben hwn. Berwir y cwyr aroglus i wneud canhwyllau sydd â galw mawr amdanynt mewn siopau crefft am eu bod yn gollwng persawr hyfryd wrth losgi[16].

### Defnyddiau meddyginiaethol

Mae'n dda i gael gwared o lyngyr o'r cylla a cheir amryw o gyfeiriadau at hynny o'r ddeunawfed ganrif a dechrau'r bedwaredd ganrif ar bymtheg:

- "The Gale or bog myrtle … is called Bwrli, or the emetic plant."[17].
- "The poor inhabitants [of north Wales] are not inattentive to its virtues, they term it Bwrle, or the emetic plant, and use it for this purpose. An infusion of the leaves as tea, and an external application of them to the abdomen, are considered as a certain and efficacious vermifuge."[7].
- "Tarflyngyr llesol ydyw'r llyswydd hwn (y gwyrddling), gan gymeryd y dail naill ai yn bylor, neu gwedi eu mwydo mewn dwr berwdig."[11].

### Nodweddion eraill

Byddai ffermwyr yn ceisio cadw eu gwartheg godro rhag pori helyg Mair am y byddai blas chwerw y planhigyn yn dod trwodd i'r llefrith a'r 'menyn.

### Entomoleg

Er gwaetha'r cemegau gwrth-bryfedegol yn y planhigyn, mae'n amlwg i amryw o bryfed ddatblygu'r gallu i ddygymod â hwynt, oherwydd mae helyg Mair yn un o blanhigion bwyd lindys y gwyfynod canlynol yng Nghymru: brocêd tywyll (*Blepharita adusta*), brocêd hardd (*Lacanobia contigua*), golau'r canclwm (*Acronicta menyanthidis*), gwladwr llychlyd (*Orthosia gracilis*), gwyfyn y rhos (*Ematurga atomaria*) a'r gwridog y rhos (*Eugraphe subrosea*) prin.

### Llyfryddiaeth

1 Gledhill, D., *The Names of Plants*, (1989).
2 Perring, F.H. a Walters, S.M., *Atlas of the British Flora*, (1990).
3 Ellis, R.G., *Flowering Plants of Wales*, (1983).
4 Awbery, G., *Blodau'r Maes a'r Ardd ar Lafar Gwlad*, Llyfrau Llafar Gwlad, rhif 31, (1995).
5 Davies, D. a Jones, A., *Enwau Cymraeg ar Blanhigion*, (1995).
6 Hayes, D., *Planhigion Cymru a'r Byd*, Gwasg Maes Onn, (1995).
7 Evans, J., *A Tour Through Part of North Wales in the Year 1798, and at Other Times*, (1800), Llundain, tud 149.
8 Vickery, Roy, *Dictionary of Plant-Lore*, (1995).
9 Parry, Thomas, *Llysieuaeth Feddygol*, Arg. H. Humphreys, Caernarfon (c.1860), tud 48.
10 Williams, Mair, *Yn Ymyl Ty'n y Coed*, (1999).
11 Davies, Hugh, *Welsh Botanology*, (1813).
12 Grigson, Geoffrey, *The Englishman's Flora*, (1958).
13 Adams, Richard, *"Helyg Mair" yn Fferm a Thyddyn*, 4, (1989).
14 Darwin, Tess, *The Scots Herbal*, (1996).
15 Mabey, R., *Flora Britanica*, (1996)
16 Baker, Margaret, *Discovering The Folklore of Plants*, Shire Books, (1996).
17 Pennant, T., *Tours in Wales*, (1883), tud 307.

Mae **Twm Elias** yn ddarlithydd a threfnydd cyrsiau ym Mhlas Tan y Bwlch, Canolfan Astudio Parc Cenedlaethol Eryri.

## The lore of plants

Llên y llysiau (The lore of plants) … is a project initiated by Cymdeithas Edward Llwyd to collect information on the cultural connections of plants in Wales, and to celebrate them. These connections include literary references, origins, place names, historical references and the uses of plants.

Bog myrtle is a deciduous shrub of moorlands in the wetter, western areas of Britain and Ireland. Typically, it grows alongside purple moor grass and sphagnum moss. It has a number of Welsh names but many of them have a common root.

It has a long history of use by man for medicinal purposes and as an insect repellant, including fleas! Despite its repellent properties, various caterpillars feed on its leaves. If eaten by cattle, however, it imparts its bitter flavour to their milk and butter. This aromatic plant has also been used to flavour beer, to dye cloth and to make scented candles. The distinctive aroma is produced by yellowish glands on the surface of the plant.

# *Seeds of* **change**

*The last 15 years have seen a rapid increase in the planting of native tree species in woodland restoration and expansion projects throughout the UK. In Wales, this planting has been encouraged through Challenge Fund schemes, which make a significant contribution to UK Woodland Habitat Action Plans.* ***Ruth Jenkins*** *and* ***Scott Wilson*** *discuss how it is becoming ever more important to ensure that planting schemes use appropriate trees and shrubs of local stock.*

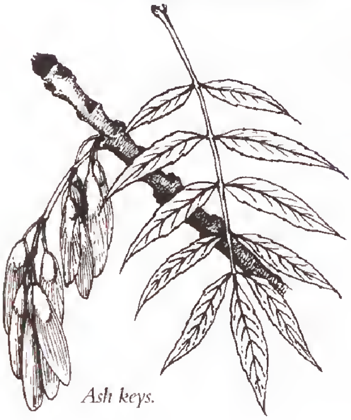
Photo: Archie Miles.

*Hazel catkins.*

The Convention on Biological Diversity is not only concerned with the conservation of species, but also with diversity within species. Native trees have adapted to meet local conditions over many centuries, and this means that they vary genetically from place to place. So if it is important to plant trees propagated from stock of local natural origins, how do we know where to go for the right seeds and plant material?

The Forestry Commission has already encouraged the adoption of a set of Local Seed Zones and a voluntary scheme for the certification of locally collected seeds. (Herbert et *al*, 1999). Now the Commission has gone one step further and has created a computer database of populations of all trees native to Wales of suitable origin. This should answer the current uncertainty about the availability and location of such trees.

This task has not been as easy as it sounds. There are few well-documented seed collection areas for native trees in Wales – for example there are only four registered seed stands for oak. So, to plug this gap in the number of sources of native seed, we organised a programme of field tours during 2000 to inspect woodlands in every part of Wales. We also examined native woodland survey records to identify suitable sources of seed. We were looking for populations of trees and shrubs with at least thirty seed-bearing individuals, and for a least forty populations of the commoner species. Conservation bodies were also invited to suggest suitable populations.

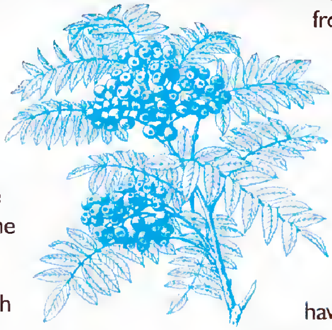


*Ash keys.*

As a result, tree populations at some 550 sites within Wales have been included in the database. At most sites there are several native tree species. We also took photographs and recorded full details of population location, site ecology, such as elevation, climate and soil conditions, and how to gain access for seed collection. In some cases we made assessments of timber form. All this information, including photographs, can be held on a single CD-ROM diskette.

Having put the spotlight on 21 native trees and shrubs, the picture which emerges is an encouraging one. There are a great many natural populations of trees and shrubs in Wales that have the potential to act as sources of seed for woodland planting in the Welsh Local Seed Zones. Natural seed supply is less abundant for some of the more minor species. Here are some of our findings:

**Oak:** There are 400 population sites recorded on the database for this widespread and abundant native species – or rather two species, as we recorded both sessile and pedunculate oak. The former is the dominant species of native western oakwoods, and where the two meet, they often grade into one another.



**Ash:** Another prevalent species, ash is present at most of our sites. The timber form is often fair to good, with many of the best Welsh ash populations in steep sided 'dingles' where straight growth is encouraged by top lighting.

**Beech:** Beech is thought to be restricted as a native to the south-eastern part of the country, so only the fifty-odd populations in this area are recorded on the database. These include some fine stands in the lower Wye valley and some upland populations in the upper coalfield valleys.

**Alder:** An abundant native, there are two distinct types of natural alder populations: riparian alderwoods which occur along watercourses; and slope or springline alderwoods. Most are the former, and include examples with good timber form, particularly in Monmouthshire, while slope alderwoods are a characteristic feature of western and upland areas of Wales, including Snowdonia.

**Birch:** Silver birch is most common in southern and eastern parts of Wales, usually as a minor component of woods dominated by oak and ash. There are 100 populations on the database. Downy birch is particularly common in south-west central Wales and Snowdonia, and is a major component of woods at a high altitude.

**Wych elm:** The only native elm in Wales, Wych elm has been hard hit by Dutch elm disease. Most populations are dominated by suckers re-growing from moribund stumps. As a result, Wych elm seed is in short supply, so vegetative propagation will be necessary. Populations are clustered in the north-east, south-east and middle Tywi catchment, and along the Menai shore.

**Hazel:** This abundant species is still common in oakwoods, and occupies a wide range of site types from fertile lowland soils to exposed upland scrub woodland sites.

**Rowan:** With a similar distribution to downy birch, rowan has an even more marked preference for western areas. It is a minor component of many types of woodland, but only dominates in exposed upland conditions, where it is accompanied by downy birch and hawthorn. It is not a gregarious species, so seed collections may need to be made from trees over a wider area than would normally be the case.

**Holly:** Often present in the understorey of oak woodlands, holly is usually found at low altitudes in the west, for example in Pembrokeshire and Carmarthenshire. It has a similar south-westerly distribution in both Scotland and Ireland. Like rowan, large populations in one site are unusual, so seed collections may need to be taken from trees in a wider catchment area. It is also important to find enough female plants which are producing berries to ensure a genetically diverse collection.

**Cherry:** Both wild cherry (gean) and bird cherry occur naturally, but neither is especially abundant. Wild cherry is a minor component of many richer ash-oak woodlands in eastern Wales and the middle Tywi valley, but is scattered elsewhere. Care needs to be taken when selecting seed sources, as some populations are of introduced origin, for example resulting from garden escapes. Bird cherry is infrequent, with only 20 populations recorded, and is restricted to the central and northern Marches, where it may not be fully native.

**Field maple:** Field maple is the only member of a large family of trees, the maples, which is native in Britain. It occurs in the understorey in native woodlands on fertile sites in eastern and southern Wales, such as the lower Wye valley, the Vale of Glamorgan and the Gower peninsula.

**Lime:** Of the two native species, the small-leaved lime is the commoner, with concentrations in the lower Wye valley between Monmouth and Chepstow, in certain areas along the 'Heads of the Valleys', and also in western Meirionnydd, between Machynlleth and Dolgellau. About forty populations are recorded on the database, and reflect this pattern of distribution. The few sites for large-leaved lime are mainly on crags in the Wye valley.

**Yew:** Restricted to areas with outcrops of Carboniferous limestone, yew woods are found in south Wales and the Denbighshire hills, where a total of 20 populations were recorded.

The next step is to make this wealth of information available to anyone working in this field. However, before information about localities can be made public, landowners need to be contacted and to give their consent, which is likely to take some time. After this, a full technical report can be published, as has already been done for a similar exercise in Scotland. This work should also contribute to other exciting developments, such as the move to include more native species within the scope of the EU Forest Reproductive Materials Regulations, which will facilitate their use in the forestry of the future.

Several strands of research will also flow from this work, such as investigations into the variation, both genetic and through adaptation to particular conditions, of different native tree populations. It will also help us consider the need for further specific measures to conserve genetic diversity of native tree species by seed movement control and establishment of gene banks.

### References

Herbert, R., Samuel, S. and Patterson, G. (1999) *Using Local Stock for Planting Native Trees and Shrubs*. F.C. Practice Note 8 F.C. Edinburgh. Wilson, S.McG. and Jenkins, Ruth.(2001) *Identifying Local Seed Origins for Native Tree Species in Wales.* (Journal title)

**Ruth Jenkins** is the Forestry Commission's Woodland Conservation Adviser for Wales, and can be contacted at the National Office for Wales, Aberystwyth.

**Scott McG. Wilson** is a Consultant Forest Ecologist and Soil Scientist.

## Trysorfa hadau brodorol

Mae'r Comisiwn Coedwigaeth wedi cynnal ymgyrch fawr i ddarganfod ffynonellau ar gyfer mathau o hadau coed brodorol sy'n addas i'w defnyddio yng Nghymru. Yn ystod y flwyddyn 2000, nodwyd 550 o safleoedd yng Nghymru ar gyfer 21 o rywogaethau ac mae'r holl wybodaeth wedi'i rhoi ar CD-Rom. Mae hyn yn cyd-fynd â'r Confensiwn ar Amrywiaeth Biolegol, sy'n pwysleisio'r angen i gynnal amrywiaeth o fewn rhywogaethau. Gan fod coed brodorol wedi addasu i amgylchiadau lleol dros ganrifoedd, maen nhw'n amrywio'n genetaidd o le i le. Cyn hyn, ychydig o safleoedd addas oedd yng Nghymru. Yn awr, mae'r darlun yn galonogol, gyda llawer o safleoedd â photensial i roi hadau, er eu bod yn brinnach ar gyfer rhywogaethau llai. Y cam nesaf yw cael caniatâd perchnogion tir. Gall y gwaith sicrhau fod coed brodorol yn cael mwy o le yng nghoedwigaeth y dyfodol ac arwain hefyd at lawer o ymchwil bellach.

# *Nodiadau o'r* **Cynulliad**

**Y mae Dr Tim Stowe, Cyfarwyddwr Cymru RSPB, yn rhoi ei sylwadau ar gyhoeddiad newydd 'Ffermio ar gyfer y Dyfodol'.**

Y mae amaethu yn sefyll yn hollol ar ei ben ei hun ymysg diwydiannau Cymru. Y mae'n defnyddio tua 80% o arwynebedd Cymru ac wedi creu adeiledd ein cymunedau gwledig yn ogystal â dylanwadu'n fawr ar fywyd gwyllt. Y mae cynnyrch ffermio yn gyfarwydd inni i gyd; y ffermwr sydd yn rhoi ein bwyd inni. Yn groes i sgil-gynhyrchion diwydiannau eraill, mae cryn werth i rai'r diwydiant ffermio. Yn wir, y mae effaith clwy'r traed a'r genau wedi argyhoeddi ambell un bod y pethau ymylol a gyflenwir gan y diwydiant amaethu yng Nghymru yn fwy gwerthfawr na'r prif gynnyrch.

Beth yw'r sgil-gynhyrchion yma? Os rhoir y bwyd a'r deunydd diwydiannol a gynhyrchir ar y fferm o'r neilltu, gellir rhestru'r cynhyrchion eraill o dan bedwar penawd.

- Mae tir sy'n cael ei amaethu yn cynnal y tri adnodd sylfaenol, pridd, dŵr ac awyr, sydd yn hanfodol i holl fywyd y ddaear.
- Mae ffermio yn cynnal a chadw amrywiaeth o dirweddau prydferth. Y ffermwr oedd yn gyfrifol am gliro'r hen goedwigoedd, creu gwrychoedd yn ystod y 19eg ganrif ac yna eu clirio yn rhannol yn yr 20fed ganrif.
- Y mae ffermio yn rhoi inni amrywiaeth eang o gynefinoedd, a ffynonellau o fwyd i fywyd gwyllt. Erbyn hyn y mae cyfran fawr o fioamrywiaeth Cymru yn dibynnu ar dir amaethyddol o bob math am ei gynhaliaeth. Yn ogystal â gwerth hanfodol bioamrywiaeth, mae bioamrywiaeth tir amaethyddol hefyd yn rhoi i gefn gwlad y prydferthwch sy'n gyfrwng i ddenu ymwelwyr yno i ymlacio. Enghraifft dda o hyn yw'r modd yn mae Menter Gwlad y Barcud yn cyfrannu tuag at y diwydiant twristiaeth; mae hefyd yn chwarae rhan yn y broses o reoli pla ar y fferm.
- Mae ffermio yn rhoi sail i adeiledd cymdeithasol ac economaidd cefn gwlad. Yn ogystal â chreu swyddi y mae amaethu yn cyflenwi adnoddau y mae diwydiannau twristiaeth, hamddena a marchnata eu hangen. Yn eu tro, y mae'r rhain yn dylanwadu ar strwythurau gwledig megis cludiant, gwasanaethau ac amwynderau.

Y mae tystiolaeth gref fod y cyhoedd yn gwerthfawrogi'r sgil-gynhyrchion hyn. Yn ôl Gallup (1966), mewn rhestr o ffactorau sy'n rhoi gwerth i fywyd mae cefn gwlad yn dod yn ail, gyda rhyddid barn yn gyntaf. Mae mwy a mwy o bobl yn ymuno â chymdeithasau bywyd gwyllt yng Nghymru; mae gan RSPB 35,000 o aelodau trwy'r wlad ac mae dwywaith cymaint â hyn gan yr Ymddiriedolaeth Genedlaethol.

Felly, a roddir ystyriaeth i'r sgil-gynhyrchion hyn pan drafodir dyfodol ffermio yng Nghymru ac yn arbennig y cymorthdaliadau a roddir i ffermwyr o bwrs y wlad? A yw ein hamgylchedd yn cael y sylw dyledus yn y ddadl?

Ym mis Tachwedd 2001, cyhoeddodd y Cynulliad Cenedlaethol ddogfen sy'n adolygu sefyllfa ffermio heddiw, Ffermio ar gyfer y Dyfodol. Daw i'r casgliad nad yw'n foddhaol a bod angen newid. Mae gan y diwydiant ddewis anodd; un ai mae'n rhaid cystadlu yn y farchnad gyda'i gynnyrch amaethyddol (os mai cystadlu am bris a fydd, parheir y tueddiadau presennol, a cholli a wnaiff ffermwyr Cymru) neu bydd yn rhaid symud i gyfeiriad mwy o gystadlu ar sail ansawdd, enw (brand) a marchnata mewn sectorau arbenigol (lle bydd gwell cyfle i droi amaethu'n llwyddiant yn ogystal â bod yn fwy derbyniol yn amgylcheddol). Tra'n creu gweledigaeth ar gyfer amaethu yng Nghymru, mae'r adroddiad yn nodi'n gadarn y cysylltiad rhwng cynnyrch amaethyddol, ansawdd yr amgylchedd (gan gynnyws bioamrywiaeth tir amaethyddol) a'r angen i droi'r diwydiant yn fwy cynaliadwy yng ngwir ystyr y gair.

Y mae'r adroddiad yn rhestru camau i'w cymryd ac mae gan y Cynulliad y grym i wireddu rhai ohonynt ar hyn o bryd megis talu i ffermwyr trwy ddulliau electronig. Ond i gyflawni eraill megis newid y Polisi Amaeth Cyffredin, mae angen elfen o gydweithrediad nas cawsom hyd yma. Mae'r cynllun gweithredu yn un eang ac yn cynnwys wyth cam amgylcheddol. Ond os caf feirniadu ei gwmpas, credaf mai ychydig iawn o sylw a gafodd y gwaith o reoli ein dyfroedd.

Nodir rhai camau amgylcheddol sy'n haeddu sylw. Yn gyntaf, bwriada'r Cynulliad ddiffinio modelau dulliau gorau o ffermio cynaliadwy sydd yn amgylcheddol dderbyniol – dulliau y mae Cyswllt Ffermio yn medru eu hyrwyddo. Os defnyddir y modelau hyn gan y rhan fwyaf o ffermwyr Cymru gallent fod o gryn fudd i gefn gwlad. Yn ail, bwriada'r Cynulliad ofyn i CCGC roi cyngor ar sut i roi gwell cyfle i gefn gwlad a'i fflora a'i ffawna i addasu i'r newid yn yr hinsawdd. Pe llwyddid i wneud hyn, gallai fod yn gam gwirioneddol ysbrydoledig. Yn drydydd, hoffai'r Cynulliad weld cymdeithasau effeithiol i reoli tir comin yn cael eu sefydlu. Byddai gwell rheolaeth o dir comin o fudd mawr i'r amgylchedd ond nid oes gan y Cynulliad y grym i wneud hyn heb gymorth o San Steffan.

Gwelwn felly bod Ffermio ar gyfer y Dyfodol wedi cymryd sgil-gynhyrchion amaethyddol i ystyriaeth yn ogystal â phryderon amgylcheddol. Ond ni chawn brawf bod llwyddiant ar ddod nes gwelwn newidiadau yng ngefn gwlad. Mae'r Gweinidog dros Faterion Gwledig wedi sefydlu rhaglen waith ar gyfer llawer iawn o gyrff ac unigolion yng Nghymru. Er lles natur yng Nghymru mae'n rhaid inni sicrhau y bydd y gwaith hwnnw yn mynd rhagddo.

# Assembly *Notebook*

**Dr Tim Stowe, Director Wales RSPB, and member of the Farming Futures Group, reports on The National Assembly's recently published vision for the future of farming in Wales, 'Farming for the Future'.**

Farming is unique among Wales's industries. It covers 80% of the landscape, has fashioned the structure of rural communities and has determined the fate of much of our wildlife. The products of this global industry are important and known to everyone: they are what we eat. Unlike other industries, its by-products are of considerable public benefit. Indeed, the impact of Foot and Mouth disease led many to conclude that the wider goods delivered by farming in Wales may in fact be more valuable than the main products.

So, what are these wider goods? The public benefits of farming, apart from the production of food or industrial materials, can be summarised under four headings.

Farmed land maintains the basic environmental resources of soil, water and air – fundamental to all terrestrial life. This includes storing, filtering and releasing rainwater, influencing the extent and severity of flooding, acting as a treatment medium for human and animal waste, storing and recycling nutrients, and providing a source of fertility for growing plants.

Farming supports and maintains diverse and attractive landscapes: farming was responsible for clearing the original wildwood, creating hedgerows in the 19th century, and then partially removing them in the 20th. Within Wales, there are regionally distinct landscapes, based on the farming system.

Farming provides a complex range of habitats and food sources for farmland wildlife. A significant component of Wales's biodiversity now depends on the farmed environment in all its variety for continued survival. In addition to the importance of biodiversity in its own right, farmland biodiversity underpins the attractiveness of the countryside in terms of the tourist and leisure industries, a good example being the Kite Country Initiative, and plays a role in on-farm pest management.

Finally, farming provides the basis of a rural social and economic infrastructure. As well as generating jobs, agriculture provides commodities on which countryside tourism, recreation and marketing industries depend. These in turn influence rural infrastructure including transport, amenity and services.

There is strong evidence that these wider goods are valued by the public at large. According to a Gallup survey in 1996, British people rank the countryside second only to freedom of speech as the biggest contributor to quality of life. Increasing numbers of people belong to wildlife organisations in Wales: membership of the RSPB in Wales is around 35,000, while membership of the National Trust is about twice that number.

In the continuing discussions about the future of farming in Wales, and in particular the future of the subsidies paid to farmers from public taxation, are these wider public benefits taken into account? Is the environment in particular being given its rightful value in the debate?

In November 2001, the National Assembly published 'Farming for the Future'. The document reviews the current state of farming, concludes that it is not healthy, and argues that change is essential. The Farming industry has a stark choice: either compete in the market place for basic agriculture production (where competition is on price, the current trends will continue and the Welsh farmer will lose), or move towards competing more on quality, brand and niche marketing (where opportunities lie to make agriculture more profitable as well as more environmentally acceptable).

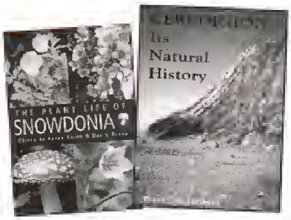
In setting out a vision for Welsh agriculture, the report firmly makes the links between agricultural production, environmental quality including farmland biodiversity, and the need to make the industry more sustainable in the true meaning of the word.

The report includes a list of actions, some of which are directly within the powers of the Assembly to achieve, such as paying more farmers electronically, whereas others, such as influencing the reform of the Common Agricultural Policy, require a degree of co-operation that has so far eluded us. The action plan is wide-ranging, including eight environmental actions, but if I were to make one criticism of its comprehensiveness it would be that management of the water resources gets little specific mention.

There are three environmental actions worthy of particular note. First, the Assembly plans to define environmentally friendly best practice models of sustainable farming that Farming Connect will be geared to promote. If such models were to be adopted by a majority of Welsh farmers, then we could expect to see considerable benefits to the countryside. Second, the Assembly plans to ask the CCW to advise on how the countryside and its flora and fauna can be given opportunities to adapt to climate change. If this were got right, it could be truly visionary in approach and implementation. Third, the Assembly wants to see effective commons management associations established. Better management of commons would be a major benefit to the environment, although the Assembly does not have the power to do this itself and needs the help of Westminster.

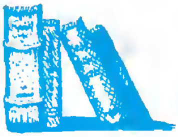
So 'Farming for the Future' has taken account of the issue of wider public goods, and has specifically considered the environmental concerns. As with all such reports, the true test will come when we observe changes on the ground.

The Rural Affairs Minister has set quite a programme of work for a wide range of institutions, organisations and individuals in Wales. For the sake of the nature of Wales, we must ensure it is achieved.



# *Green* Bookshelf

*James Robertson, Andrew Lucas*



Appropriate to our woodland theme in this issue, I will start with a new edition of **William Linnard's** classic ***Welsh Woods and Forests*** (Gomer Press, Llandysul, 2000, £19.95). First published in 1982, and soon out of print, this revised edition benefits from much new historical material. As a history, it is hard to beat. It sets our woodland heritage in context, is a mine of information, and draws a useful line under a past era of forestry. It is rooted in the old school of production forestry, so don't expect much about wildlife, recreation or the many non-commercial facets of trees and woodlands. The word 'ecology' does not appear in the index – it must be just too modern! That does not mean it is not essential reading for the woodland ecologist – it is.

The serious ecologist will be delighted with another Gomer publication, ***The Plant Life of Snowdonia*** (Gomer Press, Llandysul, 2001, ed. **Peter Rhind** and **David Evans**, £19.95). County floras aside, books of this quality which focus on the plant life of a restricted geographical area are rare indeed. The preface by R.H. Roberts strikes an engaging personal note, and the beauty of Snowdonia's plant life is wonderfully conveyed through more than a hundred superb colour photographs. I particularly enjoyed the chapter on fungi, and a section on Snowdonia's great plant hunters.

Not all books published by Gomer Press are about Wales. **Jon Gower** has written an account of life on a small island off the North American coast, ***An Island called Smith*** (Gomer Press, Landysul, 2001, £7.95). Many of the inhabitants are of Welsh stock, and their tough way of life, based on crab-potting, faces a doubtful future. Gower writes with eloquence and sympathy, recounting the thoughts and recollections of a community at the edge, and capturing the salty smell of island life.

**Mary Gillham** has written prolifically about the wildlife of the Glamorgan coast. Her latest local natural history is called ***The Garth Countryside*** (Lazy Cat Publishing, Taff's Well, 1999, £12.95). In a similar vein, **David James** has published an account of the wildlife and geology of Ceredigion in ***Ceredigion – Its Natural History*** (available from Dolhuan, Llandre, Bowstreet, Ceredigion SY24 5AB, £21 inc. p&p). He begins his Preface by arguing that natural history, if it is to have any real significance or existence, has to be made local and tangible. This he achieves wonderfully well. Supported by nearly 500 colour photographs, this book is not only a tribute to Ceredigion's natural history, but also to the quality that is achievable in a self-published book.

Finally, The Shared Earth Trust has published an excellent bilingual series of practical management guides based on the Denmark Farm experience. Subjects covered include conservation for wetland and water species, pond and lake creation and management, restoring and managing damp pastures and transforming intensively-managed grassland. They are £3.50 each, or £14.50 for the set of five, inc. p & p, cheques payable to Shared Earth Trust, from SET, Denmark Farm Conservation Centre, Betws Bledrws, Lampeter, Ceredigion. SA48 8PB

***James Robertson***

## Children's Books

***Grabbit and Skoot and the Invasion of the Grey Squirrels, Grabbit and Skoot Save a Seal Hospital, Grabbit and Skoot: Mystery of the Vanishing Otter – Horace the Hedgehog and the Birthday Party***
(Alan Cliff, Wendy Webb Books, 9 Walnut Close, Taverham, Norwich, £2.95 & £4.95)

Aimed at children between five and eight, the heroes of these books are two cats, Grabbit and Skoot. The stories are of a good length for children of this age, either to read themselves or to be read to them by adults. The series deals with contemporary environmental themes, and this gives them a rather 'worthy' feel. Do my children really need to be concerned about species competition in squirrels? Surely childhood should be a time of innocent pleasure in nature? Labelling grey squirrels in particular as nasty seems a bit unfair, given that this is the only squirrel species the vast majority of children will ever see. But these are adult concerns – my seven year old daughter enjoyed all three books very much. The only quibble was with the small illustrations, with captions barely a few millimetres high.

***Woolly Wendy and the Snowdon Lily***
(Siân Lewis, Gomer Press, Llandysul, 1999, £4.95)

A cute but clumsy sheep goes up Snowdon in search of flowers. The text is suitable for children of about six to eight, but the lively and colourful illustrations by ***Fran Evans*** will engage children much younger than this. The story has a nice counting theme, but can be a bit difficult to follow without close attention to the pictures. The readers of ***Natur Cymru*** may find the thought of a sheep guarding Snowdon's flora ironic to say the least, but young readers will love it. They have the choice of reading it in Welsh or English, including a simplified Welsh language version for beginners, which is very much to be welcomed.

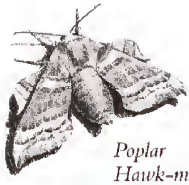
***When Hippo Was Hairy***
(Nick Greaves, Lutterworth Press, 1990, £8.99)
***When Lion Could Fly*** (Nick Greaves, Lutterworth Press, 1993, £9.99)

Two volumes of some seventy folk tales from Africa, told by ***Nick Greaves***. These books are aimed at older children, but can make great bedtime stories for the young. They will also fascinate naturalists of all ages, visitors to Africa or those interested in the rich folk heritage of the continent. Each story is followed by a short factual section on the animal concerned, which gives useful background on identification, habits and habitat. The individual tales themselves have a strong Aesop's Fables or 'Just So Stories' feel to them, which makes them books to be dipped into rather than read from cover to cover. The illustrations by ***Rod Clement*** are excellent, and seem to leap from the page. My only minor complaint is with the persistent use of imperial measures which may confuse today's children brought up in a metric world.

***Andrew Lucas***

# **Nature** *at large*/**Natur** *y byd*

## Moths on Puffin Island by **Colin Jones**


*Poplar Hawk-moth.*

Reading the article on Puffin Island in *Natur Cymru* No 1 reminded me of a challenge I set myself in 1994/95.

I have been keen on entomology since the mid 1980s, mainly light-trapping moths on Nature Reserves and other sites in Flintshire (Clwyd). Always on the lookout for new sites, but especially those which have not been light-trapped before, I was on a train to Bangor along the north Wales coast when it came to me that Puffin Island might be such a place.

Putting out feelers via the *Amateur Entomologist's Society Bulletin*, I received a letter from Joan Morgan of Bangor University, informing me that surveys had been done on the island but only by bush-beating in daylight hours, and the insect list from there was quite short. She enthused about the possibilities of a survey with a light-trap and asked if I could collect samples of leaf litter etc for her to identify other forms of insect life on the island.

With the help of a friend who owned a shrimp trawler, I landed on the shingle beach at the south of the island on the afternoon of 30th July 1994, and realised at once how difficult this challenge was going to be. Contractors renovating St. Seiriol's tower on the north-east of the island had worn a footpath, but it was very steep. With a moth trap and generator to carry on a warm summer's evening, it took some 90 minutes to reach a decent spot for light-trapping near the tower.

The island habitat was made up of long grasses, elder and nettles, overlaid with the stench of seabird and rat droppings, but to me, a perfect moth trapping site.

On that first night I caught a total of 491 moths of 42 species of which the most abundant were Common Rustic (78), Garden Tiger (71), Smoky Wainscot (53), Dark Arches (47) and eight Brussel's Lace, which were new to me. A number of moths defied recognition, but thanks to the Natural History Museum in London they were identified as Crescent Dart, much darker than the specimens I had identified myself.

A second visit in August proved less successful due to poor weather, but the following year, on 14th July, I returned by rowing boat and stayed alone on the island overnight with just the hum of the generator, the rustle of rats in the undergrowth and the chime, every 17 seconds, of the bell in the straits for company. Although very warm, there were heavy showers throughout the night and I noted that during these showers the trap was inundated with moths. This was the best night so far for species diversity, with 390 moths of 69 species caught – an increase of more than 50% on previous records, according to Joan Morgan. It is interesting that the food plants for many of these species are not to be found on the Island. Some had not been recorded from Anglesey before, and some of the other insects collected were new to north Wales.

| | |
|---|---|
| Angle Shades | 2 |
| Barred Red | 1 |
| Bordered Pug | 2 |
| Bright-Line Brown-Eye | 16 |
| Brimstone Moth | 5 |
| Brown-Line Bright-Eye | 32 |
| Brussel's Lace | 8 |
| Buff Arches | 3 |
| Buff Ermine | 13 |
| Burnished Brass | 64 |
| Cabbage Moth | 1 |
| Cloaked Minor | 10 |
| Common Carpet | 1 |
| Common Emerald | 4 |
| Common Footman | 11 |
| Common Rustic | 79 |
| Crescent Dart | 34 |
| Dark Arches | 74 |
| Dark Marbled Carpet | 1 |
| Dark Swordgrass | 1 |
| Dark-barred Twin-spot Carpet | 1 |
| Dot Moth | 3 |
| Double Square-spot | 1 |
| Double Striped Pug | 1 |
| Dun Bar | 2 |
| Early Thorn | 7 |
| Garden Carpet | 1 |
| Garden Tiger | 150 |
| Gold Spot | 1 |
| Grey Pug | 1 |
| Heart & Club | 23 |
| Heart & Dart | 1 |
| July Highflyer | 4 |
| Large Yellow Underwing | 25 |
| Lesser Broad-bordered Yellow Underwing | 11 |
| Lesser Yellow Underwing | 2 |
| Light Arches | 8 |
| Mottled Rustic | 25 |
| Mouse Moth | 1 |
| Narrow-winged Pug | 1 |
| Pale-Mottled Willow | 1 |
| Poplar Hawk-moth | 2 |
| Purple Clay | 4 |
| Riband Wave | 15 |
| Scalloped Oak | 2 |
| Setaceous Hebrew Character | 1 |
| Shaded Broad-bar | 6 |
| Silver Y | 4 |
| Single-dotted Wave | 6 |
| Small Angleshades | 2 |
| Small Fanfoot | 2 |
| Small Fan-footed Wave | 1 |
| Small Rivulet | 1 |
| Small Square Spot | 2 |
| Smoky Wainscot | 89 |
| Square-spot Rustic | 12 |
| Straw Dot | 1 |
| Straw Underwing | 1 |
| Swallow-tailed Moth | 24 |
| The Clay | 28 |
| The Drinker | 13 |
| The Engrailed | 19 |
| The Lackey | 57 |
| The Rivulet | 3 |
| The Rustic | 1 |
| The Snout | 44 |
| The Spectacle | 12 |
| The Uncertain | 5 |
| Toadflax Pug | 1 |
| True Lovers' Knot | 3 |
| V-Pug | 3 |
| Willow Beauty | 17 |
| Wormwood Pug | 3 |
| Yellow Shell | 1 |
| Yellow Tail | 1 |

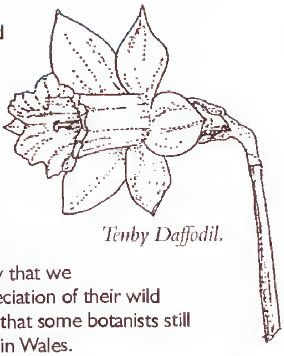
My thanks to Sir Richard Williams-Bulkeley for kind permission to land, and to John Jones of Llangoed for rowing me out and back on that last visit.

## Gwyfynod Ynys Seiriol

Yn 1994-5, mentrodd Colin Jones i ddefnyddio trap golau i ddal gwyfynod ar Ynys Seiriol. Dyma'r canlyniadau: Gorffennaf 30, 1994 – 491 o wyfynod o 42 rhywogaeth, gan gynnwys rhai newydd iddo. Gorffennaf 14, 1995 – 390 o 69 rhywogaeth, 50% yn fwy nag a gofnodwyd yno o'r blaen. Doedd planhigion bwyd amryw o'r gwyfynod ddim ar yr ynys, roedd sawl math heb eu cofnodi ym Môn o'r blaen a chasglwyd trychfilod eraill a oedd yn newydd i ogledd Cymru.

## **Ray Woods** reports on the fortunes of the wild daffodil

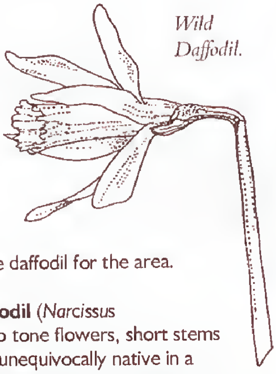
There is certainly one and might be two species of daffodil native to Wales. The love of the Welsh for daffodils has embraced them as a national emblem, yet strangely for years awoke no response to conserve them in the wild. Indeed we have planted them so widely that we appear to have lost an appreciation of their wild ancestry even to the extent that some botanists still doubt their wild credentials in Wales.


*Tenby Daffodil.*

**The Tenby Daffodil** (*Narcissus obvolloris*) is an undoubted puzzle. This all deep yellow, crisp, compact daffodil of incomparable quality of form was until recently unknown from anywhere else in the world but Wales.

In 1975 a short article appeared in the *Field* by **John Akeroyd** noting its discovery in central Spain. Prior to this the Tenby daffodil was only known in quantity from fields in and around Tenby in Pembrokeshire. Treasured by the Victorian gardener, truck loads of bulbs were sent by rail to be sold in the London markets to the extent that they were almost exterminated around Tenby.

**David Jones** in his enchanting book on the Tenby Daffodil traces its fortune in detail and with pleasure notes its 'rediscovery' by the people of Tenby. The road verges on the approaches to the town are now planted with them – the only appropriate daffodil for the area.


*Wild Daffodil.*

**The Lent Lily** or **wild daffodil** (*Narcissus pseudonarcissus*) with its two tone flowers, short stems and narrow leaves appears unequivocally native in a scattering of woodlands and meadows down the Welsh marches and up the Wye and Usk valleys. These latter populations are the western outposts of a population centred in Britain on Gloucestershire, Herefordshire and Devon. This British population is itself at the western extremity of a range that covers south western Europe and extends in the east to northern Italy. But it is mostly confined to France, Spain and Portugal.

On a world scale the wild daffodil it is not quite as scarce as bluebells (*Hyacynthoides non-scripo*) but is not far behind. Yet its recent history in Wales is one of contraction and loss of populations. On the best judgements of our leading Welsh botanical recorders there may well be fewer than 30 sites left in Wales where native populations of over 1,000 wild daffodils can be seen. Most report significant declines with agricultural intensification as the commonest cause, but losses of major populations have occurred in recent years to housing and road building. Only a small number of sites are offered some form of statutory protection and none specifically for the daffodil. Sympathetic owners manage a few others. No local Biodiversity Action Plan in Wales has included wild daffodil to date.

The still widespread occurrence of naturalized populations, the difficulty in distinguishing native from planted sites and the long-persistence of remnant populations in hedge bottoms and woodland margins has perhaps masked the true scale of the decline. What is clear is that we will have to care a little more for our national flower in the future if we wish to see it in its true splendour.

*Tenby Daffodil, Tŷ Mawr Mill.*

## Bygythiad i flodyn Cymru

Er bod y blodyn yn symbol o Gymru ac wedi'i blannu ymhobman, prinhau y mae enghreifftiau gwyllt o gennin Pedr. Yn ôl barn arbenigwyr, dim ond tua 30 safle sydd yng Nghymru lle mae mwy na 1,000 o enghreifftiau gwyllt. Dau fath brodorol Cymreig sydd – cenhinen Dinbych y Pysgod, a ganfuwyd yn Sbaen hefyd yn 1975, a'r gennin Pedr ddeuliw sydd i'w chael ar y Gororau.

Mae datblygiadau tai a ffyrdd, yn ogystal â newidiadau ffermio, wedi arwain at ddirywiad. Rhaid i ni ofalu'n well am ein blodyn cenedlaethol.

# **Biodiversity** *Round-up*

## A Gift to the Earth

Congratulations to the Forestry Commission, who have received WWF's top environmental award. The Gift to the Earth award, which was presented to the Commission recently at a ceremony in London, was made in recognition of the Commission's forest certification work and for good forest management.

Accepting the award for the Forestry Commission, its Director General **David Bills** said: "Just ten years ago it was fairly unthinkable that the Forestry Commission would be presented with WWF's highest award for helping to preserve the planet's natural wealth."

Following the Earth Summit at Rio ten years ago, the Forestry Commission developed a UK Forestry Standard to promote sustainable forest management, and introduced certification of its own forests, and those managed by others, which achieved this standard. This is just one of the ways in which the Commission is helping to deliver biodiversity targets for woodland habitats.

## Millennium Biodiversity Report

It is now ten years since the Rio Earth Summit enshrined biodiversity in international law; as reported in the last *Natur Cymru*, a second Earth Summit will be held in Johannesburg later this year. Now is the time to review progress.

The UK Millennium Biodiversity report in 2001 was a major stock-taking exercise and looked critically at what had been achieved in the UK, through the UK Biodiversity Action Plan.

In January 2002, the National Assembly's (NAW) Environment, Planning and Transport Committee considered a report on issues and achievements in Wales. The report was presented by the Wales Biodiversity Group (WBG), representing organisations in Wales taking action on the UK BAP.

It made proposals to the Assembly about:

- **Enhancing policy integration** – long-term benefits in the wider countryside will require biodiversity considerations to be mainstreamed into policy making and implementation, as part of sustainable development;
- **Extending access to biodiversity information and expertise** to improve action on the ground, particularly through the use of information and communication technologies (ICT);
- **Building broader support for biodiversity**, by helping decision-makers and local communities understand how biodiversity action can provide solutions to their problems;
- **The importance of local action**, which helps to integrate biodiversity needs into local services, enhance the wildlife valued by local communities as well as that identified as nationally or internationally important, and engage local people in conservation;
- **Greater responsibilities and opportunities** to shape the implementation of the UK Biodiversity Action Plan so as to reflect Wales's distinctive conservation priorities while fulfilling international obligations;

**June Milligan**, Chair of the WBG introduced the report and covered the background to the Convention on Biological Diversity; other WBG members briefly outlined grassroots action, the importance of access to good information and the significance of marine biodiversity and the urban and suburban environments.

All Committee Members had read the full report and asked penetrating and perceptive questions for over an hour. They identified how the health and wealth of biodiversity is connected to policy formulation and economic strategies, and underpins the sustainable development agenda. Assembly Members showed great interest in the tables listing species and habitats featured in the local Biodiversity Action Plans covering their own constituencies. The report will now form the basis for a wider NAW consultation. You can view the full Report on the NAW website under EPT 01-02 Agenda 9 January.

## Newyddion Bioamrywiaeth

**Gwobr** – Cafodd y Comisiwn Coedwigaeth un o wobrau amgylcheddol ucha'r WWF am osod safonau a rhoi tystysgrifau ar gyfer rheolaeth gynaliadwy ar goedwigoedd.

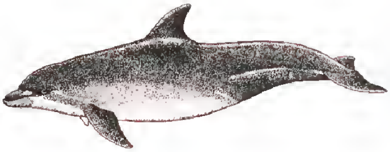
**Arolwg** – Ddeng mlynedd wedi Uwch Gynhadledd y Ddaear yn Rio, bu Pwyllgor Amgylchedd y Cynulliad yn ystyried adroddiad gan Grŵp Bioamrywiaeth Cymru am ddatblygiadau yng Nghymru.

Galwodd y grŵp am:

- well integreiddio o ran polisi
- ei gwneud hi'n haws cael gafael ar wybodaeth ac arbenigedd
- greu cefnogaeth ehangach i fioamrywiaeth
- bwysleisio gweithredu lleol
- fwy o gyfle yng Nghymru i ddehongli Cynllun Gweithredu Bioamrywiaeth y DU.

Bydd yr adroddiad yn rhan o ymgynghoriad ehangach gan y Cynulliad.

# *Materion* **morol**
# **Marine** *matters*



## Dolffiniaid a morfilod

*gan* ***Rhys Jones***

Mae cynnydd aruthrol wedi digwydd yn ddiweddar yn yr arfer o wylio dolffiniaid a morfilod gyda nifer o gwmnïau arbenigol yn darparu gwyliau a thripiau ar longau i'w gwylio. Yn wir mae Bae Gwasgwyn (Bay of Biscay) wedi dod i'r amlwg fel un o brif safleoedd y byd lle gellir gweld nifer ac amrywiaeth fawr o ddolffiniaid a morfilod. Nid oes raid crwydro cyn belled â Bae Gwasgwyn nac ychwaith adael y tir gan fod dolffiniad a llamidyddion i'w gweld yn rheolaidd oddi ar arfordir Cymru. Mae dolphin trwyn-potel Bae Ceredigion yn ddigon adnabyddus ac mae llamidyddion hefyd yn gyfarwydd i lawer. Mae trydedd rywogaeth hefyd iw gweld yn rheolaidd oddi ar ein penrhynnau gorllewinol, sef dolffin Risso. Maent wedi eu hastudio yn fanwl gan Gyfeillion Bae Ceredigion ond mae lle i ddysgu llawer mwy am y mamaliaid trawiadol yma.

Mae unrhyw un sydd yn gweld dolffin Risso, neu unrhyw ddolffin neu forfil arall yn cael eu hannog i wneud cofnod o'r digwyddiad. Dylid gyrru cofnodion i'r Seawatch Foundation, sydd yn cydlynu cofnodion o amgylch Prydain i gyd ac yn cynhyrchu adroddiadau tymhorol i Gymru.

Eu cyfeiriad yw:
**Seawatch Foundation, 11 Jersey Road, Oxford. OX4 4RT**
**www.seawatchfoundation.org.uk**

Dolphins and porpoises can often be spotted off the west Wales coast. The bottle-nosed dolphin in particular is well known in Cardigan Bay, and Risso's dolphin has also been studied closely. More information is always welcome. Please send any details of sightings of whales or dolphins, including Risso's dolphins, to the Seawatch Foundation at the above address.

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## Y môr yn y gaeaf

Mae ***Lucy Kay*** wrthi'n dysgu Cymraeg ac wedi mynd ati i ymarfer ei sgiliau ysgrifennu yn yr erthygl yma.

Yn ystod y gaeaf, rydym yn gyfarwydd â gweld y coed heb eu dail, ac â gweld llai o fywyd gwyllt yng nghefn gwlad. Ond beth sy'n digwydd yn ein cornel ni o'r blaned las? Beth sy'n digwydd yn y moroedd o gwmpas Cymru yn ystod y gaeaf? Beth sy'n digwydd i fywyd gwyllt y môr?

Fel ar y tir, y mae newidiadau mawr yn digwydd yn y môr rhwng yr hydref a'r gwanwyn. Y newidiadau pwysicaf yw:

- tywydd stormus
- tymheredd is
- dyddiau byrrach

Mae tywydd stormus yn bwysig oherwydd ei fod yn cymysgu'r maetholion. Mae'r ffytoplancton angen y rhain oherwydd dyma beth sy'n eu helpu i dyfu pan fydd y tymheredd yn codi a'r dydd yn ymestyn yn y gwanwyn. Mae tymheredd y dŵr yn gostwng yn eithaf cyflym erbyn diwedd y flwyddyn, ond nid yw'n gostwng cymaint â'r tymheredd ar y tir.

Fel arfer, mae tymheredd y môr ar ei isaf tua diwedd mis Chwefror – tua 4-5 gradd Celsius o gwmpas Cymru. Ond mae'n bosib iddo fynd yn is na hyn.

Er bod llawer o wymon i'w gweld ar y traeth, a môr-wiail ar riffiau o gwmpas yr arfordir, nid yw gwymon a phlanhigion eraill yn y môr yn tyfu yn y gaeaf. Maen nhw'n disgwyl i'r tywydd gynhesu yn heulwen y gwanwyn. Mae rhai rhywogaethau o wymon, yn arbennig gwymon coch, yn goroesi fel sborau ar wely'r môr sydd yn egino yn y gwanwyn.

Mae'n bosib gweld llawer o anifeiliaid yn y môr hyd yn oed yn y gaeaf. Mae rhai yn marw dros y gaeaf, ond hefyd mae llawer yn goroesi ac mae ganddynt ffyrdd gwahanol o wneud hynny. Mae rhai anifeiliaid yn newid eu ffurf i'w helpu i oroesi'r gaeaf ac yn edrych yn wahanol iawn yn y gaeaf o'i gymharu â'r haf. Mae yna rai eraill sy ddim yn tyfu yn y gaeaf o gwbl, ac eraill sy'n medru symud i leoedd cynhesach. (Cofiwch bod yna lawer o anifeiliaid y môr sydd yn sefydlog mewn un man dros eu holl fywyd ac sy ddim yn cael cyfle i symud i unrhyw fan arall.)

Yn ystod y gaeaf mae rhai o anifeiliaid y môr yn paratoi ar gyfer bridio yn gynnar iawn yn y gwanwyn. Er enghraifft, mae yna rai sy'n cario eu hwyau o gwmpas yn ystod y gaeaf er mwyn bod yn barod pan fydd y ffytoplancton yn cynyddu yn y gwanwyn.

Y môr o gwmpas Cymru yw'r rhan o'n cefn gwlad na fedrwn ei weld yn hawdd. Mae hyn yn arbennig o wir yn y gaeaf pan fydd y tywydd yn ei gwneud hi'n anos i ni fynd o dan y dŵr. Gwyddom bod llawer yn digwydd yn y môr yn ystod y gaeaf, ond mae'n wir dweud bod yna lawer ar ôl i ni ei ddarganfod hefyd.

The sea is a different place in the winter as compared with the summer. Storms are more frequent, the temperature is lower and the days are shorter. Storms do help to stir up nutrients from the sea bed but lower temperatures and less sunlight mean that seaweeds stop growing. Other plants create overwintering spores that germinate in the spring. Many animals either die, survive in different forms or move to warmer waters. Despite this, some organisms prepare for breeding during the winter and some carry their eggs during the cold period, ready to take advantage of the spring growth of phytoplankton on which the young forms feed.

# **Nature** *in reserve*
# **Natur** *mewn gwarchodfeydd*

**Paul Culyer, Warden at Cors Caron NNR, describes efforts to reverse the dramatic decline of the lapwing.**

*"Marshy fields and rough upland pastures are typical haunts, but its choice of habitat is cathalic; it feeds, a shore bird, on tidal flats, it flacks on cultivated land, it is the companion of the Curlew and Golden Plover on the bleak moor. Indeed it is everywhere and often abundant".*[1]

This quotation describes a situation long since lost from the British countryside in general and the Welsh countryside in particular. And, of course, numbers of the lapwing's moorland 'companions' have declined significantly also.

In the 19th century breeding lapwings were reported from every county of the British Isles, absent only from the Channel Islands and the Isles of Scilly.[2] The acrobatic display flight and distinctive call would have been a very familiar sight and sound in the British countryside. However, whilst still widespread and abundant, lapwing numbers were declining. Their eggs were considered a delicacy and many thousands were collected each year. Habitat loss, then as now, was also an issue with significant areas of wet and other marginal land being brought into agricultural production by drainage and enclosure. The decline was reversed somewhat during the inter-war period but the downward trend has continued post-1945.

In England and Wales more than 90% of breeding pairs nest on agricultural land.[3] The loss of traditional mixed farms along with changes to cropping regimes, such as the move away from spring sown to autumn sown cereals are significant factors. The relationship between the decline in numbers of breeding lapwing and changes in agricultural practices has been well documented.[4]

However, this decline has not just been confined to agricultural land as the following notes from the Cors Caron files show: 1953: "Under 100 pairs"; and in 1960: "20 pairs on the bog, many more on marginal land". By the time we reach 1998 the picture is rather bleak to say the least "1 pair attempted to breed in compartment 33 but failed early on". Quite clearly some active management and monitoring work was urgently needed. 1998 was the first year of a monitoring programme, designed and implemented by Andy Polkey, for an assemblage of fifteen breeding birds including lapwing *Vanellus vanellus*, redshank *Tringa totanus* and snipe *Gallinago gallinago*. The monitoring approach principally uses the 'Common Bird Census' methodology with a reduced number of visits and standard RSPB species methods. The aim is to determine the number and location of pairs (or other counting unit e.g. singing males) on at least three visits between April and mid-July. For lapwing specifically the count is made of displaying or incubating birds between the beginning of April and the middle of June.

Cors Caron is a very extensive raised mire system developed over a glacial lake which once occupied the broad valley of the river Teifi. The Teifi floodplain is made up of a diverse range of vegetation communities including sedge beds, poor-fen, willow carr, reed swamp, mire and species poor rush pasture.

Agricultural tenants occupy much of the suitable habitat for lapwings at Cors Caron and there has been a general trend of concentration on sheep production. Where cattle are still kept these are now the heavier continental breeds and there is a reluctance to graze these animals on the marginal forage available on the flood plain grassland. Also the terrain is treacherous in places and the farmers are unwilling to risk losing these expensive animals. Finding graziers with the right type of hardy stock who are willing to graze marginal areas is a significant barrier to establishing a conservation orientated grazing regime.

Whilst the flood plain grassland has been dominated by rush (mostly Soft Rush *Juncus effusus*) since at least the 1950s the vegetation structure has almost certainly changed in that time with the change in the grazing regime and reduction in rush and hay cutting. Sheep find the rush unpalatable and the stands of rush have become very tall and dense.

Detailed advice on habitat conditions for breeding lapwing was sought from Tony Pickup (RSPB Lapwing Recovery Project Officer). Here are some basic principles:[5]

**Sward height:** The aim is to have a uniformly short sward of less than 5cm over the site by mid-March with only very sparse tall rush (ideally absent). Areas of taller vegetation adjacent to the nesting sites provide protection for the chicks from predators and bad weather.
**Bare ground:** This is very important for foraging lapwing and can be up to 50% cover
**Site size:** The site should be open, level and at least 5 hectares in size. The nesting area should be at least 2 hectares.
**Soil water levels:** The aim should be to maintain as high a water table as possible and to retain shallow surface water where possible. This will keep the soil invertebrate fauna close to the surface and available to the lapwings.
**Avoiding trampling:** All stock should be excluded from the site from March to mid-June. If it is essential to graze the site then 0.4 livestock units/ha should be the maximum level.

Initially three compartments were identified as being potential sites for the establishment of suitable breeding habitat. Two are within areas occupied by tenants and the third is let to a grazier on an annual basis.

Inevitably, establishing a new management regime that will create the right habitat conditions takes time. The first task was to remove the dense tussocks of rush vegetation. In 1999 the first area was cut in late summer using conventional agricultural contractors. The cost of cutting and baling was approximately £150 per hectare. In 2001 the cost dropped to £65 per hectare, the crop being much lighter due to the previous years' cutting and baling. The cut material was baled using a big baler and offered to local farmers as bedding, and this offer was readily taken up.

In 2000 the second area was also cut and baled (by the agricultural tenant who had entered the Tir Gofal Scheme) and in 2001 all three areas were cut and baled. The next step was to look at the grazing regime and how we might move away from a regime dominated by cattle grazing. Initially on two sites we have tried extensive winter grazing by ponies with additional feeding as necessary. This has been reasonably successful but the rush growth tends to get away from the ponies during March as spring begins. If weather conditions are amenable a second cut could be made in late February /early March although this is generally unlikely due to wet or even flooded ground conditions at this time.

Highland cattle are being used on the reserve to restore some area of poor-fen and mire and these would be ideal for summer/winter grazing on the flood plain grassland. This may possibly develop in partnership with a neighbouring farmer. Welsh Black cattle would be equally satisfactory and are of course a Welsh traditional breed.

So have we been successful? The results of our monitoring have been encouraging. In 2000 at least 7 pairs attempted to breed with at least one pair successfully fledging young. Monitoring during 2001 was curtailed due to the Foot & Mouth outbreak, however we think around 10 pairs attempted to breed.

This once ubiquitous bird of the farmed landscape is being more and more confined to nature reserves. However if we can establish and maintain a viable population they will be able to re-colonise farmland that is brought into sympathetic management, perhaps through agri-environment schemes such as Tir Gofal. Once again the people of Wales and its visitors will be able to enjoy the wheeling flight and distinctive call of this handsome bird.

**References:**

1 Coward. T.A. 1947. *The Birds of the British Isles and their eggs*. 7th Edition. Warne, London.

2 Holloway, S. 1996. *The Historical Atlas of Breeding Birds in Britain and Ireland*: 1875-1900. Poyser, London.

3 Shrubb, M. & P.C. Lack. 1991. *The numbers and distribution of Lapwings V. vanellus nesting in England and Wales*. Bird Study 38: 20-37.

4 Shrubb, M. 1990. *Effects of agricultural change on nesting Lapwings Vanellus vanellus in England and Wales*. Bird Study 37: 115-127.

5 Pickup, T. RSPB in litt.

## Adfer y cyswllt coed

Mae cyfle i adfer y gydberthynas rhwng ffermio a choedwigaeth ac ailddarganfod hen werthoedd. Mae'r angen am ddiwygio CAP, safonau newydd ar gyfer coedwigoedd cynaliadwy, Tir Gofal, a'r incwm isel o bren meddal confensiynol i gyd yn chwarae rhan. Dechreuodd dirywiad y drefn integredig ar ôl diddymu'r mynachlogydd, gan gyflymu gyda sefydlu'r Comisiwn Coedwigaeth yn 1919 ac ysgogiadau treth a arweiniodd at blannu coed bythwyrdd.

Mae'r rhwystrau'n cynnwys:

- gorbori gan ddefaid
- grantiau yn ôl y pen ar gyfer tir pori
- cynlluniau coedwigaeth sy'n cau anifeiliaid allan
- prisiau isel cynnyrch coed
- awydd ffermwyr mewn argyfwng i gael atebion cyflym.

Mae syniadau'n cynnwys rhoi mwy o anogaeth i integreiddio coed a ffermio trwy Tir Gofal a chynlluniau sy'n annog defnydd o goed i helpu gweithgareddau ffermio yn hytrach na'u disodli. Mae angen ffermydd arddangos ac ymrwymiad tymor hir gan y Cynulliad a'r gwahanol gyrff cyhoeddus perthnasol.

For photographs and illustrations, thanks to/diolch am y lluniau i:

Claire Carvell, CCGC/CCW, L.J. Colley, P. Culyer, Mike Edwards, English Nature, P.H. Evans, Elizabeth Fleming-Williams, Forest Enterprise, John Good, Mike Hammett, Loek Kuiters, Jim Latham, Mandy Marsh, Archie Miles, Kevin J. Richardson, Shared Earth Trust, K.C. Walton, Scott McG. Wilson, Woodfall Wild Images, Ray Woods, Liz Woolley.

*Van Siôn daffodil.*

£3.50